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TANK CREWMAN (M60A1) READINESS TESTS. (U)

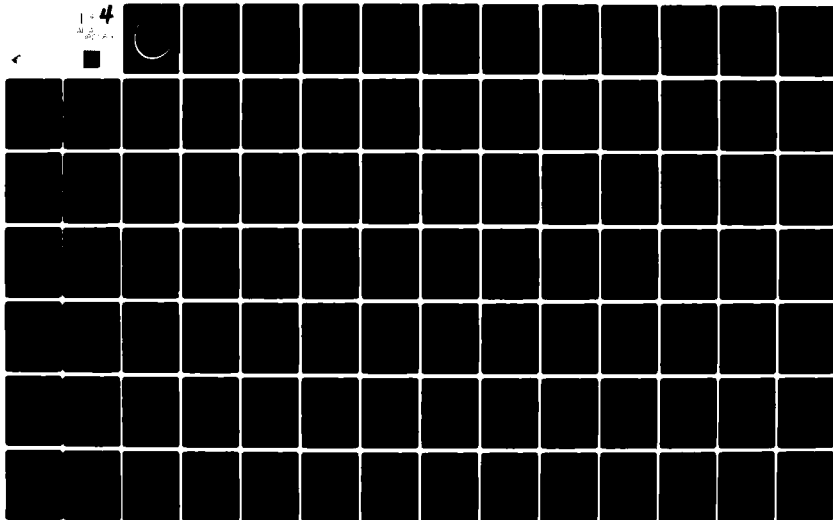
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TANK CREWMAN (M60A1) READINESS TESTS

ARI Field Unit at Fort Knox, Kentucky

NOVEMBER 1979

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This document provides tests and administrative guidance for evaluating M60A1 tank crewman job readiness. General procedures, time estimates, and support equipment for using the tests in a unit setting are given first. Remaining sections of the report give detailed test administration and scoring procedures for the crew positions, driver, loader, gunner, and tank commander.		

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The tests cover knowledge and skill aspects of the important crewman tasks: those tasks that are most relevant to crew gunnery proficiency. The tests are designed for use by the unit commander in diagnosing crewmen abilities in conducting before-operations checks, disassembling and assembling weapons, and driving, loading, and shooting in a tactical setting. When used with the three companion documents, Tank Crewman (M60A1) Training Modules, Tank Crew (M60A1) Performance Exercise, and Program Management for a Tank Crewman Skills Training Program, the readiness tests provide an integrated "train-up" package for annual gunnery evaluation.

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RESEARCH PRODUCT RP-79-13

TANK CREWMAN (M60A1) READINESS TESTS

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# FOREWORD

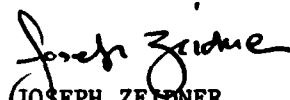
The Fort Knox Field Unit of the Army Research Institute for the Behavioral and Social Sciences (ARI) carries out research and exploratory development in the area of Armor training. An objective of this work is to develop, through analytic and field research, tank crew training methods that are effective and efficient.

This report is one of a set of four dealing with the development and maintenance of proficiency in M60A1 tank crewman with special emphasis on application in reserve training.

Companion documents are:

1. Tank Crewman (M60A1) Training Modules, ARI Research Product RP-79-14 , November 1979.
2. Tank Crew (M60A1) Performance Exercise, ARI Research Product RP-79-15 , November 1979.
3. Program Management for Tank Crewman Skills Training Program, ARI Research Product RP-79-16 , November 1979.

The project of which this report is a part was conducted by personnel of the Human Resources Research Organization (HumRRO) under Contract No. DAHC 19-76-C-0001 and monitored by Donald F. Haggard, Chief of ARI Field Unit at Fort Knox. The research was done under Army Project 2Q763743A773 and is responsive to requirements of the U.S. Army Armor School at Fort Knox, the Army Training and Doctrine Command, and the Army Forces Command.

  
JOSEPH ZEIDNER  
Technical Director

## SUMMARY

This report includes readiness tests for each of the four M60A1 duty positions (Driver, Loader, Gunner, Tank Commander). The individual readiness tests are to be used in three ways:

- . As pre-tests, they are administered to crewmen before training begins. The crewmen then follows a particular instructional sequence, depending on the results of the pre-tests.
- . As end of training mastery tests, after crewmen complete the instructional sequence directed by the results of the first administration.
- . Diagnostically throughout training, to identify needs for refresher training.

The readiness tests consist of two types:

- . Written readiness tests measure a crewman's knowledge level of particular tasks. These tests were developed from the technical audio-visual training program.
- . Hands-on readiness tests measure a crewman's skill level for particular tasks. They were developed from a priority individual task list.

The battery of readiness tests for each crewman consists of:

- . Driver: Operational Checks and Services (k)  
Before Operations Procedures and  
Tank Start-Up (s)  
Target Acquisition (k)  
Locating and Reporting Targets (k)  
Tactical Driving (s)
- . Loader: Weapons Maintenance (k and s)  
Mission Preparation (k and s)  
Combat Loading (k and s)  
Target Acquisition (k)  
Locating and Reporting Targets (s)

- . Gunner: Weapons Maintenance (k and s)  
 Before Operations Procedures (s)  
 Weapon Systems Preparation (k and s)  
 Combat Loading (k and s)  
 Target Acquisition (k)  
 Locating and Reporting Targets (s)  
 Tactical Operations (k and s)
- . Tank Commander: Weapons Maintenance (k and s)  
 Before Operations Procedures (s)  
 Weapon Systems Preparation (k and s)  
 Combat Loading (k and s)  
 Target Acquisition (k)  
 Locating and Reporting Targets (s)  
 Tactical Operations (k and s)

Time estimates to complete the readiness tests are:

- |          |             |                  |             |
|----------|-------------|------------------|-------------|
| . Driver | 5 1/4 hours | . Loader         | 7 1/2 hours |
| . Gunner | 11 hours    | . Tank Commander | 11 hours    |

The readiness tests provide the commander with a diagnostic tool for determining crewman proficiency. They can also be used as a screening device for the assignment of replacements or the reassignment of crewmembers.

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## TANK CREWMAN (M60A1) READINESS TESTS

### INTRODUCTION

This research product contains procedures for administering individual readiness tests and a battery of tests for each crew position.

### BACKGROUND

In 1977 the training needs of reserve component units were changing. The M48A1 tank was being replaced by the M48A5 tank and the draft had been eliminated. Equipment and personnel turbulence was on the increase and the cost of training related items continued to rise.

In response to the need for a new approach to reserve component training, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) initiated research to design training plans for operating and maintaining the M48A5 tank. In 1977, the Tank Crewman Skills Training Program (TCST) (Harris, Osborn, and Boldovici, 1977) was developed to accommodate the ARI requirement. The TCST program consisted of three major components:

- . Crew Interaction Performance Test (CIPT)
- . Duty Position Readiness Tests (DPRTs)
- . Duty Position Training Modules (DPTMs)

### PURPOSE

The purpose of the readiness tests is to measure the knowledge and skill levels of tank crewmembers in regards to performing various priority tasks.



GUIDELINES  
FOR  
TEST ADMINISTRATOR

This section provides guidance for administering duty position readiness tests. Specific items covered are:

- . Standardized conditions
- . Rater preparation
- . Test interruptions
- . Gunnery engagements
- . Test site requirements
- . Time requirements
- . Training aids/devices requirements

STANDARDIZED CONDITIONS

Accurate assessment of individual crewman readiness requires standardized test conditions. All personnel tested must be presented with identical stimulus conditions. The test conditions described for each readiness test must be strictly adhered to. Events must occur according to the directions for establishing and administering each readiness test.

RATER PREPARATION

The raters are the key to a successful test. Rater responses must not be left to chance and every effort must be made to minimize rater subjectivity. The key to good rating lies in rater motivation and familiarity of the rater with the test as conducted "on the ground." The test administrator must frequently check the raters to insure objectivity and continuity.

The rater must know tank crewman requirements, the procedure for each test item, the purpose of the test, and the mechanics of evaluation. Raters must be prepared in advance and given a briefing on the subject matter they are to rate. They must be impressed with the importance of their duty, the need for objectivity, and the requirements for test security. Raters must be provided reference material such as FMs, TMs, job aids, and copies of pertinent SOPs.

## TEST INTERRUPTIONS

It is recognized that events will occur that are not listed as test items. These may include equipment failures and reactions to events not planned for testing. The interruptions must not be treated administratively. If a serious event such as equipment failure occurs, the test should be terminated until the situation is corrected. A new order should be given starting the test where it stopped.

## GUNNERY ENGAGEMENTS

Readiness tests entitled, "Tactical Driving," "Combat Loading," and "Tactical Operations," include tank gunnery engagements for the evaluation of specific crewmen's ability to accomplish various related tasks. Most of these test elements will be conducted in a simulated "dry firing" situation; however, some will be conducted during actual firing using the laser or sub-caliber firing devices.

## TEST SITE REQUIREMENTS

The written readiness tests can be conducted in a classroom and some hands-on readiness tests can be conducted in the company area. However, those tests which involve tactical driving, combat loading, locating and reporting targets, and tactical operations require sufficient terrain (2 x 4 km) to set-up appropriate courses. Testing of tactical driving and combat loading can be accomplished simultaneously. One piece of terrain which has natural or man-made obstacles (vertical obstacles, ditches, hills, and water obstacles), depressions suitable for tank defilade, and simulated targets can be used to accommodate the "move-out" type tests.

## TIME REQUIREMENTS

Time requirements to conduct the tests have been determined as the result of administering these tests to a large number of tank crewmen. However, the time requirements for hands-on tests are only estimates. Actual time will vary among units because of different terrain, availability of equipment, and location of facilities. Therefore, a dry run to determine realistic times to conduct hands-on readiness tests, is necessary before the tests can be administered. Table 1 indicates estimated hours to complete the tests.

## TRAINING AIDS/DEVICE REQUIREMENTS

Table 2 indicates training aids/device required to administer readiness tests. TEC tapes pre-tests are used for written tests and the remaining items are used for the hands-on tests.

NOTE: A companion research product, "Program Management for Tank Crewman Skills Training Program," explains in detail the development of the program and provides implementing guidance for training managers and trainers.

TABLE 1. TIME ESTIMATES FOR DUTY POSITION  
READINESS TESTS.

POSITION	READINESS TEST	HOURS	CROSS TRAINING HOURS	TOTAL HOURS
<b>DRIVER</b>				
A	Operational Checks and Services (k)	1/2	-	1/2
B	Before Operations Procedures and Tank Start-up (s)	1 1/2	-	1 1/2
C	Target Acquisition (k)	1	-	1
D	Locating and Reporting Targets (s)	3/4	-	3/4
E	Tactical Driving (s)	1 1/2	-	1 1/2
		5 1/4	-	5 1/4
<b>LOADER</b>				
A	Weapons Maintenance (k)	1/2	-	1/2
B	Weapons Maintenance (s)	1	-	1
C	Mission Preparation (k)	1/2	-	1/2
D	Mission Preparation (s)	2	-	2
E	Combat Loading (k)	1/2	-	1/2
F	Combat Loading (s)	1 1/4	(1/4)	1 1/4
G	Target Acquisition (k)	1	-	1
H	Locating and Reporting Targets (s)	3/4	-	3/4
		7 1/2	(1/4)	7 1/2
<b>GUNNER</b>				
A	Weapons Maintenance (k)	1/2	-	1/2
B	Weapons Maintenance (s)	1	(1/2)	1
C	Before Operations Procedures (s)	3/4	-	3/4
D	Weapon Systems Preparation (k)	1 1/4	(1/4)	1 1/4
E	Weapon Systems Preparation (s)	1 1/4	(1/2)	1 1/4
F	Combat Loading (k)	3/4	(3/4)	3/4
G	Combat Loading (s)	1 1/4	(1 1/4)	1 1/4
H	Target Acquisition (k)	1	-	1
I	Locating and Reporting Targets (s)	3/4	-	3/4
J	Tactical Operations (k)	1/2	-	1/2
K	Tactical Operations (s)	2	-	2
		11	(3 1/4)	11
<b>TANK COMMANDER</b>				
A	Weapons Maintenance (k)	1/2	-	1/2
B	Weapons Maintenance (s)	1	(1/4)	1
C	Before Operations Procedures (s)	3/4	(1/4)	3/4
D	Weapon Systems Preparation (k)	1 1/4	(1/2)	1 1/4
E	Weapons Systems Preparation (s)	1 1/4	(1/2)	1 1/4
F	Combat Loading (k)	3/4	(1/2)	3/4
G	Combat Loading (s)	1 1/4	(1)	1 1/4
H	Target Acquisition (k)	1	-	1
I	Locating and Reporting Targets (s)	3/4	-	3/4
J	Tactical Operations (k)	1/2	-	1/2
K	Tactical Operations (s)	2	(1/4)	2
		11	(3 1/4)	11

NOTE: (k) indicates knowledge (written tests) and (s) indicates skill (hands-on tests).

TABLE 2. CONSOLIDATED EQUIPMENT LISTS FOR READINESS TESTS

<u>Item</u>	<u>Used by</u>	<u>Quantity</u>	<u>Remarks</u>
<b>TEC Tapes with pre-tests</b>			
020-171-1611-F	DV,LD,GN,TC	1	
020-171-1612-F	DV,LD,GN,TC	1	
020-171-1614-F	DV,LD,GN,TC	1	
935-171-0203-F	DV,LD,GN,TC	1	
020-171-5366-F	DV,LD	1	
020-171-5367-F	DV,LD	1	
020-171-5368-F	DV,LD	1	
020-171-5369-F	DV,LD	1	
020-171-5370-F	DV,LD	1	
020-171-1132-F	LD,GN,TC	1	
020-171-1133-F	LD,GN,TC	1	
020-171-5229-F	LD,GN,TC	1	
020-171-5340-F	TC	1	
020-171-5343-F	TC	1	
020-171-5352-F	LD,GN,TC	1	
020-171-5353-F	GN,TC	1	
020-171-5354-F	GN,TC	1	
020-171-5355-F	GN,TC	1	
020-171-5341-F	GN,TC	1	
020-171-5351-F	GN,TC	1	
020-171-5337-F	GN,TC	1	
020-171-5331-F	LD,GN,TC	1	
020-171-5332-F	LD,GN,TC	1	
020-171-5346-F	LD,GN,TC	1	
020-171-5347-F	LD,GN,TC	1	
020-171-5348-F	LD,GN,TC	1	
020-171-5361-F	TC	1	
020-171-5364-F	GN,TC	1	
020-171-5342-F	GN	1	
(TEC pre-tests, 1 per crewmember)			
Dummy main gun rounds	LD,GN,TC	3 APDS 3 HEAT 2 HEP	
Ammunition Stowage Plan	LD,GN,TC	1	
Dummy 7.62 ammunition	LD,GN,TC	3 ten rd. belts	
Dummy caliber .50 ammunition	LD,GN,TC	3 ten rd.belts	
Cardboard representation of 7.62 box ammunition	LD,GN,TC	3 sets, 15 ea.	
Cardboard representation of caliber .50 box ammunition	LD,GN,TC	3 sets, 15 ea.	
Replenisher tape mockup	LD,GN,TC	2	
Coax	LD,GN,TC	1 per tank	
M85 machinegun	LD,GN,TC	1 per tank	

TABLE 2. (Cont'd.) CONSOLIDATED EQUIPMENT LISTS FOR READINESS TESTS

<u>Item</u>	<u>Used by</u>	<u>Quantity</u>	<u>Remarks</u>
Block of wood 1"x6"x6"	LD	1 per tank	
Heavy black thread	LD	1 ball	
Tape (masking)	LD	1 roll	
Equipment to remove breechblock	LD,GN,TC	1 per tank	
Main gun zero target	LD,GN,TC	1	
Coax zero panel	LD,GN,TC	1	
M85 machinegun zero panel	TC	1	
Targets	LD,GN,TC	1 set	See TC Readiness Test, Part K.
Beseler Cue/See	DV,LD,GN,TC	4	
Binoculars	LD,GN,TC	1 per tank	
Stopwatch	LD,GN,TC	1 per tank	
Protective mask	DV,LD,GN,TC	1 per crewman	
M60A1 tank	DV,LD,GN,TC	1 per crew	
Driving course	DV	1	See DV Readiness Test, Park E.
Target acquisition course	DV,LD,GN,TC	1	See DV,LD,GN,TC Readiness Test on "Locating and Reporting Targets"
Target engagement course	GN,TC		See GN,TC Readiness Test on Tactical Operations

## READINESS TESTS

Readiness tests for each crewmember are contained in Appendixes A through D. Each appendix includes a consolidated listing of each crew position readiness test battery, written readiness tests, and hands-on readiness tests.

### CONSOLIDATED READINESS TEST LISTING

The consolidated listing includes the following information about the readiness test battery:

- . Required time
- . Cross training
- . Part identification
  - Type
  - Time
  - Location
  - Support
  - Scoring

### WRITTEN READINESS TESTS

These tests include the following subsections:

- . Test overview
  - Title
  - Part identification
  - Conditions
  - Instructions to specific crewman
  - Tasks
  - Explanatory notes
- . List of TEC lesson pre-tests
- . Answer sheet
- . Answer key

## HANDS-ON READINESS TESTS

These tests include the following information:

- . Title
- . Part identification
- . Conditions
- . Instructions to specific crewman
- . Tasks
- . Explanatory notes
- . Performance measures



#### REFERENCES

Harris, J.H., Osborn, W.C., and Boldovici, J.A. Reserve Component Training for Operating and Maintaining the M48A5 Tank. Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), 1977.

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Locating and Reporting Targets (Part I, Skill)	
Tactical Operations (Part J, Knowledge)	
Tactical Operations (Part K, Skill)	

**APPENDIX A**  
**DRIVER'S READINESS TEST**

## DRIVER'S READINESS TEST

REQUIRED TIME. 5 1/4 hours

CROSS TRAINING. Tank Crew Gunnery Skills Test (TCGST) tasks, FM 17-12-2 are indicated by an \*; Cross Training tasks are indicated by a # symbol.

### PART A. OPERATIONAL CHECKS AND SERVICES (W)

Type: Written pre-tests for TEC Lessons:

020-171-5366-F (Before Operations Maintenance, Part I)  
020-171-5367-F (Before Operations Maintenance, Part II)  
020-171-5368-F (Before Operations and At Halt Maintenance Checks and Services)  
020-171-5369-F (After Operations Maintenance Checks and Services, Part I)  
020-171-5370-F (After Operations Maintenance Checks and Services, Part II)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

### PART B. BEFORE OPERATIONS PROCEDURES AND TANK START-UP (HO)

Type: Hands-On

Time: 1 1/2 hours

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART C. TARGET ACQUISITION (W)

Type: Written pre-tests for TEC Lessons:

020-171-1611-F (Target Range Determination)  
020-171-1612-F (Locating and Reporting Targets)  
020-171-1614-F (Target Acquisition Scanning Techniques)  
935-171-0203-F (Armor Vehicle Recognition)

Time: 1 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART D. LOCATING AND REPORTING TARGETS (HO)

Type: Hands-On

Time: 3/4 hour

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART E. TACTICAL DRIVING (HO)

Type: Hands-On

Time: 1 1/2 hour

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

## **DRIVER'S READINESS TEST**

### **PART A. OPERATIONAL CHECKS AND SERVICES (W)**

**CONDITIONS.** The Driver is in a classroom and is administered TEC pre-tests 020-171-5366-F through 020-171-5370-F.

**INSTRUCTIONS TO DRIVER.** "You have received a test booklet and answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of one part: Before, During and After Operations Maintenance Checks and Services (TEC Lessons 020-171-5366-F through 020-171-5370-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

### **TASKS.**

Identify deficiencies in the tank suspension system:

- |                   |                                 |
|-------------------|---------------------------------|
| . road wheels     | . driving sprockets             |
| . center guides   | . shocks                        |
| . support rollers | . track adjusting link assembly |
| . torsion bars    | . track tension                 |

Identify deficiencies in:

- |                  |                     |
|------------------|---------------------|
| . battery cables | . fire extinguisher |
| . hatch latches  | . oil coolers       |

Explain the meaning of oil dip stick markings.  
Explain the procedure for checking the brakes.  
Explain the procedure for checking the IR headlights.  
Explain the safety precautions during refueling.

### **NOTES.**

- a. See Module D-1 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.

## DRIVER'S READINESS TEST

### PART A: OPERATIONAL CHECKS AND SERVICES

The Test Proctor will administer the following TEC Lesson pre-tests and the Driver will answer only those questions so indicated:

- . Before, During, and After Operation Maintenance Checks and Services (020-171-5366-F through 020-171-5370-F).
- Driver will answer all questions.

DRIVER'S READINESS TEST

PART A: OPERATIONAL CHECKS AND SERVICES

TEC Lessons 020-171-5366-F  
through 020-171-5370-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5366-F through  
020-171-5370-F

1.a.

b.

c.

d.

e.

f.

g.

h.

i.

j.

k.

l.

m.

2.a.

b.

c.



3.a.

b.

4.

5.

6.

7.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## **DRIVER'S READINESS TEST**

### **PART A: OPERATIONAL CHECKS AND SERVICES**

#### **PRE-TEST ANSWER KEY**

**TEC Lessons 020-171-5366-F  
through 020-171-5370-F**

#### **ANSWER KEY**

#### **BEFORE, DURING AND AFTER OPERATION MAINTENANCE CHECKS AND SERVICES M60/M60A1 TANK (020-171-5366-F through 020-171-5370-F)**

1. For each of the pictures in question one the soldier should have identified the problem, if any, and stated the action needed.
  - a. This road wheel is cracked and must be replaced. Report it on a DA 2404 to organizational maintenance. (Reference Lesson 5366)
  - b. OK. (Reference Lesson 5366)
  - c. The support roller bearing is frozen up; the support roller and the bearing must be replaced. Report this on a DA 2404. (Reference Lesson 5366)
  - d. The road wheel seal is leaking and must be replaced. Report this on a DA 2404. (Reference Lesson 5366 and 5368)
  - e. This visual shows a broken torsion bar. Report it on a DA 2404. (Reference Lesson 5366)
  - f. OK. (Reference Lesson 5366)
  - g. This sprocket is excessively worn and must be replaced. Report it on a DA 2404. (Reference Lesson 5366)
  - h. OK. (Reference Lesson 5366)
  - i. This shock is leaking and should be replaced. Report this situation on a DA 2404. (Reference Lesson 5366)
  - j. In this picture the track tension is too tight. It must be adjusted by the crew. (Reference Lesson 5370)
  - k. The hold open latch is not in its proper UP position. Lock the hatch securely UP or DOWN. (Reference Lesson 5367)

1. There is no green inspection tag on this extinguisher. Turn this one in to organizational maintenance for inspection. (Reference Lesson 5367)
- m. Replace the frayed cable on this battery. (Reference Lesson 5370)
2. Here are the actions you must take for each situation:
  - a. Add oil to the full mark. (Reference Lesson 5366)
  - b. Add oil to the add mark. (Reference Lesson 5366)
  - c. Notify organizational maintenance, you may have to have some oil drained. (Reference Lesson 5366)
3. Check your answers against these:
  - a. Press on the brake pedal until the brake pressure gage reads between 750 and 900 psi. Maintain that position on the pedal for 30 seconds. If the pressure drops you have a brake problem. (Reference Lesson 5367 and 5368)
  - b. Insure that the brake pedal does not go to the floor, that the brakes will stop the vehicle, and that the pedal linkage appears to be in good working condition. (Reference Lesson 5367)
4. When refueling have a man stand by with a fire extinguisher, turn the master battery switch OFF, ground the hose nozzle to the tank, and never allow anyone to smoke in the immediate area. (Reference Lesson 5369)
5. You should check for oil leaks, obstructed screen, and loose mounting bolts. (Reference Lesson 5369)
6. Turn on the light to the IR mode and then feel for heat coming from the lens. Never look into the light. (Reference Lesson 5369)
7. The red groove means that the track adjusting link is extended as far as it can be. A track block should be removed and the track tension readjusted. (Reference Lesson 5370)

**SCORING KEY.**

Award 5 points for each correct response (105 points possible).

**PASSING SCORE = 95 points.**

## DRIVER'S READINESS TEST

### PART B. BEFORE-OPERATIONS PROCEDURES AND TANK START-UP (HO)

**CONDITIONS.** Fully operational M60A1 tank situated on level ground with main gun over rear deck and drain valves open. The tank has loose track tension and a M24 periscope which is dirty or has parts missing.

**INSTRUCTIONS TO DRIVER.** "Prepare the tank for night driving in an NBC environment. Your activities will include Driver requirements for: checking the suspension system, battery cables, hatch latches, fire extinguishers, and oil coolers for deficiencies, checking engine and transmission oil levels, and explaining safety precautions during refueling. You will be scored on what you do as well as how you do it. I will observe your performance and serve as TC and Loader as needed."

### TASKS.

- Inspect tank suspension system for deficiencies.
- Inspect battery cables, hatch latches, fire extinguishers, and oil coolers for deficiencies.
- Check brakes for proper operation.
- Explain safety precautions for refueling.
- Remove M27 periscope.
- Perform before-operations checks and services on M24 (IR) and M27 periscope.
- Install M24 (IR) periscope.
- \*Place M24 (IR) periscope into operation.
- Start tank engine.
- \*Perform before-operations checks and services on engine and transmission oil levels.
- Place tank in motion.
- \*Position tank for checking track tension.
- Operate tank intercommunications system.
- \*Perform main gun prepare-to-fire procedures.
- Perform before-operations checks and services on gas particulate unit.

### NOTES.

- a. Driver should not be given this test until he has passed Driver's Readiness Test, Part A.

- b. Remedial training on tasks failed should be provided on the spot but after Driver has completed all of Part B. See Module D-2 for remedial training.
- c. It is not necessary to perform the tasks in the order given; however, the steps within each task must be performed in order.
- d. Estimated time, 1 1/2 hours.

**PERFORMANCE MEASURES.**

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. INSPECT TANK SUSPENSION SYSTEM FOR DEFICIENCIES			
. Road wheels.	___	___	___
. Center guides.	___	___	___
. Support rollers.	___	___	___
. Torsion bar.	___	___	___
. Driving sprockets.	___	___	___
. Shocks.	___	___	___
. Track adjusting link assembly.	___	___	___
2. INSPECT OTHER COMPONENTS FOR DEFICIENCIES			
. Battery cables.	___	___	___
. Hatch latches.	___	___	___
. Fire extinguishers.	___	___	___
. Oil coolers.	___	___	___
3. CHECK BRAKES FOR PROPER OPERATION			
. Depressed brake pedal until brake pressure gage read between 750-900 psi.	___	___	___
. Maintained pressure on brake pedal for 30 seconds.	___	___	___
. Checked brake pressure gage to determine if there was a pressure drop.	___	___	___
4. EXPLAIN SAFETY PRECAUTIONS FOR REFUELING			
. Indicated one crewmember stood by with a fire extinguisher.	___	___	___
. Indicated master battery switch was in OFF position.	___	___	___
. Indicated hose nozzle must be grounded to tank.	___	___	___
. Indicated no smoking was allowed in immediate area.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
5. REMOVE M27 PERISCOPE			
. Loosened wing nuts on both sides of periscope.	___	___	___
. Rotated retainers until clear of periscope mounting lugs.	___	___	___
. Removed periscope from bracket.	___	___	___
6. PERFORM BEFORE-OPERATIONS MAINTENANCE CHECKS AND SERVICES ON THE M24 (IR) PERISCOPE AND M27 PERISCOPE			
a. M24 (IR) Periscope			
. Inspected M24 (IR) periscope and spare head for cracked and dirty lenses and completeness.	___	___	___
. Recorded on DA Form 2404 damaged or unserviceable parts detected.	___	___	___
b. M27 Periscope			
. Inspected M27 periscope and spare head for cracks and dirty lenses.	___	___	___
. Cleaned dirty lenses.	___	___	___
. Recorded on DA Form 2404 any damaged lenses.	___	___	___
7. INSTALL THE M24 (IR) PERISCOPE			
. Closed Driver's hatch.	___	___	___
. Placed mastery battery switch in OFF position.	___	___	___
. Instructed crew member to rotate turret so gun tube was forward.	___	___	___
. Pulled periscope holder lid handle down with fingers of left hand while pushing up on lid latch with thumb.	___	___	___
. Pushed upward and opened lid.	___	___	___
. Reached to rear of seat and unlatched both catches on IR periscope stowage box.	___	___	___
. Removed periscope from stowage box.	___	___	___
. Pulled up (rearward) on elevating adjustment lever insuring bind (tension) has been released on elevation clamp and elevation clamp pivots.	___	___	___
. Loosened jam nut on front (forward) inside of elevation clamp.	___	___	___
. Used both hands and positioned periscope in periscope holder.	___	___	___
. Pushed up on periscope until it locked in holder, (insured periscope was locked in holder before released.)	___	___	___
. Insured elevation clamp was positioned in periscope holder detent.	___	___	___

Yes No NA

- . Tightened adjustment screw on front right hand inside the elevation clamp until elevation clamp was firmly seated in periscope holder detent. \_\_\_
- . Tightened elevation clamp adjustment screw jam nut. \_\_\_
- . Pushed elevation adjustment lever downward (forward) and locked periscope. \_\_\_
- . Unscrewed dust cap from power receptacle (center) location. \_\_\_
- . Unscrewed power cable connecting plug from stowage receptacle on right hand side of compartment. \_\_\_
- . Threaded power cable connecting plug into periscope receptacle and hand tightened. \_\_\_
- . Installed periscope without exposing it to direct sunlight. \_\_\_

8. PLACE THE M24 (IR) PERISCOPE INTO OPERATION

- . Turned master battery switch ON. \_\_\_
- . Placed blackout selector switch in BO DRIVE. \_\_\_
- . Turned IR switch ON. \_\_\_
- . Visually checked to insure IR indicator lamp was lit. \_\_\_
- . Turned lighting control switch handle to the left. \_\_\_
- . Pulled elevation adjustment lever up. \_\_\_
- . Adjusted periscope elevation angle to a comfortable position by moving periscope with both hands. \_\_\_
- . Pushed elevation adjustment lever down to lock periscope in position. \_\_\_
- . As necessary, loosened two inner wing nuts on headrest until the proper eye distance was obtained, then retightened (hand tight) both wing nuts. \_\_\_
- . As necessary, bent headrest to fit head contour by pulling, pushing or twisting on each side of headrest. \_\_\_
- . Allowed periscope to warm up for 5 minutes before adjusting focus. \_\_\_
- . Unscrewed left and right dust caps from bottom of focus controls. \_\_\_
- . Rotated left and right focus control knobs until view from each eyepiece appeared with maximum sharpness. \_\_\_
- . Screwed left and right dust covers back over focus control knobs and tightened finger tight. \_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
<b>9. START TANK ENGINE</b>			
. Locked hatches in open or closed position.	___	___	___
. Checked that drain valves were closed.	___	___	___
. Locked parking brakes by depressing brake pedal and placing the transmission shift lever in PARK.	___	___	___
. Placed steering control in center position.	___	___	___
. Placed fuel shut-off valve handle in ON position.	___	___	___
. Placed fuel pump switch in ON position.	___	___	___
. Placed generator switch in ON position.	___	___	___
. Placed master battery switch in ON position.	___	___	___
. Checked that power plant warning lamp and master control switch indicator lamps were lit.	___	___	___
. Checked to insure fuel gages were operating.	___	___	___
. Purged the fuel lines of air, if tank had not been operated within the past week.	___	___	___
. Depressed accelerator pedal about 2/3 to 3/4 of full displacement and firmly pressed and held starter switch until engine started (but no longer than 15 seconds).	___	___	___
. As soon as engine started, released starter switch and checked that generator blower was operating.	___	___	___
. Allowed engine to warm up for at least three minutes at 1000 to 1200 rpm.	___	___	___
. Reduced engine rpm to idle speed (700 to 750 rpm) just prior to shifting.	___	___	___
<b>10. PERFORM BEFORE-OPERATIONS CHECKS AND SERVICES ON TANK ENGINE AND TRANSMISSION OIL LEVELS</b>			
(Loader checks oil levels while Driver performs required related tasks.)			
. Set parking brake (on "Loader's" command to start engine).	___	___	___
. Started tank engine (on "Loader's" command to start engine).	___	___	___
. Idled engine between 1000-1200 rpm for 5 minutes.	___	___	___
. Reduced engine idle to 700-750 rpm.	___	___	___
<b>11. PLACE TANK IN MOTION</b>			
. Told crew members to secure hatches in the open or closed position.	___	___	___
. Turned on appropriate lights.	___	___	___
. Depressed accelerator to disengage the accelerator lock.	___	___	___
. Released accelerator.	___	___	___
. Depressed brake pedal and moved transmission shift lever to NEUTRAL with engine idle speed at 700-750 rpm.	___	___	___



	Yes	No	NA
. Released parking brake.	___	___	___
. Maintained pressure on brake pedal and moved transmission shift lever to LOW.	___	___	___
. Released brake pedal and depressed accelerator slowly.	___	___	___
<b>12. POSITION TANK FOR CHECKING TRACK TENSION</b>			
(Loader checks and adjusts track tension while Driver performs required related tasks.)			
. Moved tank forward on level hard surface and, when signaled by the Loader, coasted to a stop without applying brakes.	___	___	___
. Made final forward adjustments (without applying brakes) in response to Loader's signals in order to aline a track link on #2 support roller.	___	___	___
<b>13. OPERATE TANK INTERCOMMUNICATIONS SYSTEM</b>			
. Adjusted CVC helmet to head.	___	___	___
. Insured CVC helmet radio-interphone switch is in center position.	___	___	___
. Connected interphone connector to plug at left bottom of control box.	___	___	___
. Connected radio-audio connector to plug at right bottom of control box.	___	___	___
. Placed control box monitor switch in either the ALL, A, INT ONLY, or B position.	___	___	___
. Transmitted to TC, DRIVER READY.	___	___	___
(TC insures tank is running and radio is ON.)			
<b>14. PERFORM MAIN GUN PREPARE-TO-FIRE PROCEDURES</b>			
. Cleared periscope.	___	___	___
. Lowered seat for close hatch driving.	___	___	___
. Closed and locked Driver's hatch.	___	___	___
. Turned master control switch to ON.	___	___	___
. Started engine on TC's command, CHECK FIRING SWITCHES.	___	___	___
. Reported DRIVER READY on TC's command, REPORT.	___	___	___
<b>15. PERFORM BEFORE-OPERATIONS CHECKS AND SERVICES ON THE GAS PARTICULATE UNIT</b>			
. Inspected precleaner, particulate filter unit housing, gas filter cannisters and air heater for dents, missing or loose control knob and/or pinched or blocked air hose.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Wiped precleaner, particulate filter housing, gas filter cannisters and air heater clean with a damp rag.	___	___	___
. Insured hose assemblies and electrical cables were tight and serviceable.	___	___	___
. Removed spring clip from air inlet openings.	___	___	___
. Placed gas particulate switch ON.	___	___	___
. Disconnected air duct hose from Driver's airface connector and checked for air flow.	___	___	___
. Rotated air heater knob to ON and checked for indicator lamp operation.	___	___	___
. Checked air flow through hose.	___	___	___
. Allowed air to warm up at least 5 minutes.	___	___	___
. Checked air temperature.	___	___	___
. Adjusted protective mask and attached air hose.	___	___	___
. Requested other crew members to check gas particulate unit.	___	___	___
. Removed and stowed air hose and protective mask.	___	___	___
. Rotated air heater knob to OFF and listened for audible click.	___	___	___
. Placed gas particulate switch OFF.	___	___	___
. Replaced spring clip to air inlet openings.	___	___	___
. Recorded on DA Form 2404 any damaged or unserviceable components.	___	___	___

#### SCORING.

To pass, Driver must have:

- a. Removed M27, installed M24, and inspected both without cueing by the scorer.
- b. Been checked "Yes" or "NA" on each performance measure.
- c. Task steps which do not apply to the situation, i.e., DA Form 2404 entries when no deficiencies are found will be scored "NA."

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## DRIVER'S READINESS TEST

### PART C. TARGET ACQUISITION (W)

**CONDITIONS.** The Driver is in a classroom and is administered TEC pre-tests 020-171-1611-F, 020-171-1612-F, 020-171-1614-F, and 935-171-0203-F.

**INSTRUCTIONS TO DRIVER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of four parts: Target Range Estimation (TEC Lesson 020-171-1611-F), Locating and Reporting Targets (TEC Lesson 020-171-1612-F), Target Acquisition Scanning Techniques (TEC Lesson 020-171-1614-F), and Armor Vehicle Recognition (TEC Lesson 935-171-0203-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any key questions concerning test context. When you finish turn in the test booklet and answer sheet to the Test Proctor.

#### TASKS.

- Explain the range estimation method in which you estimate the range half the distance to the target.
- Explain the range estimation method in which a target at a known range appears half as big as a like target at an unknown range.
- Explain the range estimation method in which a target at a known range appears twice as big as a like target at an unknown range.
- Explain location of targets by the clock system.
- Explain reporting of targets by the clock system.
- Explain the technique of quick search scanning of an area.
- Explain ways to adapt your eyes to the darkness.
- Explain how to preserve night vision.
- Explain how to scan an area at night.
- \*Identify US and Foreign Armor Vehicles.

#### NOTES.

- a. See Module D-3 for remedial training of deficiencies.
- b. Estimated time, 1 hour.

## DRIVER'S READINESS TEST

### PART C: TARGET ACQUISITION

The Test Proctor will administer the following TEC Lesson pre-tests and the Driver will answer only those questions so indicated:

- . Target Range Estimation (020-171-1611-F)
  - Driver will answer questions 2, 4, and 5.
- . Locating and Reporting Targets (020-171-1612-F)
  - Driver will answer question 1.
- . Target Acquisition Scanning Techniques (020-171-1614-F)
  - Driver will answer questions 1, 3, 4, and 6
- . Armor Vehicle Recognition (935-171-0203-F)
  - Driver will identify all vehicles shown on TEC tape, vehicle 1 through vehicle 17.

DRIVER'S READINESS TEST

PART C. TARGET ACQUISITION

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1611-F

2. Step a.

Step b.

Step c.

4.

5.

020-171-1612-F

1.a. Target

b. Posture

c. Direction

d. Range

020-171-1614-F

1.

3.

4.

6.a.

b.

935-171-0203-F

<u>VEHICLE</u>	<u>COUNTRY</u>	<u>VEHICLE</u>	<u>COUNTRY</u>
1.		10.	
2.		11.	
3.		12.	
4.		13.	
5.		14.	
6.		15.	
7.		16.	
8.		17.	
9.			

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

## DRIVER'S READINESS TEST

### PART C. TARGET ACQUISITION

#### PRE-TEST ANSWER KEY

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-0203-F

#### ANSWER KEY

#### TARGET RANGE ESTIMATION (020-171-1611-F)

2. The Driver's diagram or description must include three steps:
  - Step a. Divide the distance to the target in half.
  - Step b. Estimate the distance to the halfway point in 100 meter increments.
  - Step c. Double the range for estimated range to target.
4. 1000 meters
5. 600 meters

#### LOCATING AND REPORTING TARGETS (020-171-1612-F)

- 1.a. Target TANK
- b. Posture MOVING LEFT
- c. Direction ONE O'CLOCK (12:00 or 2:00 is acceptable)
- d. Range ONE FIVE HUNDRED

#### TARGET ACQUISITION SCANNING TECHNIQUES (020-171-1614-F)

1. A, C
3. B, C
4. A
- 6.a. Short, jerky movements
- b. Pause a few seconds at each point

ARMOR VEHICLE RECOGNITION  
(935-171-0203-F)

	<u>VEHICLE</u>	<u>COUNTRY</u>		<u>VEHICLE</u>	<u>COUNTRY</u>
1.	AMX-30	French	10.	AMX-13	French
2.	M60	U.S.	11.	M60A1	U.S.
3.	CHIEFTON	British	12.	JAG-PANZER	German
4.	ASU-57	Soviet	13.	PT-76	Soviet
5.	M551	U.S.	14.	T-34	Soviet
6.	T-10	Soviet	15.	LEOPARD	German
7.	CENTURIAN	British	16.	ASU-85	Soviet
8.	M60A2	U.S.	17.	T-62	Soviet
9.	T-55	Soviet			

SCORING KEY.

Award 5 points for each correct response (165 points possible).

PASSING SCORE = 150 points.



## DRIVER'S READINESS TEST

### PART D. LOCATING AND REPORTING TARGETS (HO)

**CONDITIONS.** Fully operational M60A1 tank located at observation point on target acquisition course. The course includes silhouette, tank and truck targets located at ranges from 400 meters to 1500 meters. The Driver will be buttoned up and while looking through his M27 periscope respond to the TC's instructions. (The tank will be positioned with the front pointing directly down the center of the range, Driver's target area of responsibility is from 10 o'clock to 2 o'clock.

**INSTRUCTIONS TO DRIVER.** "This is a test of your target acquisition ability. You will be required to scan the area, locate targets in the area, estimate range to various targets, and report target locations. React to my instructions."

#### TASKS.

Conduct a quick search scan of the area.  
\*Locate and identify targets in the area.  
Estimate range to targets in the area.  
Report location of targets in the area.

#### NOTES.

- a. Driver should not be given this test until he has passed Driver's Readiness Test, Part C.
- b. Tasks should be performed in order given.
- c. See example layout of target acquisition course.
- d. See Module D-4 for remedial training of deficiencies.
- e. Estimated time, 3/4 hour.

# PERFORMANCE MEASURES.

Yes No NA

## 1. CONDUCT A QUICK SEARCH SCAN OF THE AREA

Given the special command to SCAN YOUR TARGET AREA OF RESPONSIBILITY:

- . Scanned area directly to the front, going from close in to far out. \_\_\_\_\_
- . Scanned area to the left (or right) of initial area, overlapping initial area, going from close in to far out. \_\_\_\_\_
- . Scanned area to the right (or left) of initial area overlapping initial area, going from close in to far out. \_\_\_\_\_

## 2. LOCATE AND IDENTIFY TARGETS IN THE AREA

Given the special command, LOCATE AND IDENTIFY TARGETS IN THE AREA, the Driver will have five minutes to locate and identify all targets.

- . Located and identified Target 1 (TROOPS). \_\_\_\_\_
- . Located and identified Target 2 (TANK). \_\_\_\_\_
- . Located and identified Target 3 (TANK). \_\_\_\_\_
- . Located and identified Target 4 (TRUCK). \_\_\_\_\_
- . Located and identified Target 5 (TROOPS). \_\_\_\_\_
- . Located and identified Target 6 (TRUCK). \_\_\_\_\_
- . Located and identified Target 7 (TANK). \_\_\_\_\_
- . Located and identified Target 8 (TROOPS). \_\_\_\_\_

## 3. ESTIMATE RANGE TO TARGETS IN THE AREA

Given the range of 1000 meters to Target 2 and the special command to DETERMINE RANGE TO ALL TARGETS IN THE AREA, the Driver will determine the range to all targets to within  $\pm$  100 meters.

- . Determined range to Target 1 as 400 meters. \_\_\_\_\_
- . Determined range to Target 3 as 500 meters. \_\_\_\_\_
- . Determined range to Target 4 as 1200 meters. \_\_\_\_\_
- . Determined range to Target 5 as 1000 meters. \_\_\_\_\_
- . Determined range to Target 6 as 1200 meters. \_\_\_\_\_
- . Determined range to Target 7 as 1500 meters. \_\_\_\_\_
- . Determined range to Target 8 as 900 meters. \_\_\_\_\_

#### 4. REPORT LOCATION OF TARGETS IN AREA

Yes No NA

Given a designated target and the special command, REPORT LOCATION OF TARGET NO. \_\_\_\_\_, the Driver will report the type, posture (moving or stationary), location (by clock system, within one hour deviation), and range to the target (within  $\pm$  100 meters).

- . Target 1. TROOPS, STATIONARY, TEN O'CLOCK, FOUR HUNDRED
- . Target 3. TANK, STATIONARY, ONE O'CLOCK, FIVE HUNDRED
- . Target 4. TRUCK, MOVING LEFT TO RIGHT, ELEVEN O'CLOCK, TWELVE HUNDRED
- . Target 5. TROOPS, STATIONARY, ONE O'CLOCK, ONE THOUSAND
- . Target 6. TRUCK, STATIONARY, TWELVE O'CLOCK, ONE TWO HUNDRED
- . Target 7. TANK, STATIONARY, TWELVE O'CLOCK, ONE FIVE HUNDRED
- . Target 8. TROOPS, STATIONARY, TWO O'CLOCK, NINE HUNDRED.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

#### SCORING.

To pass, Driver must have:

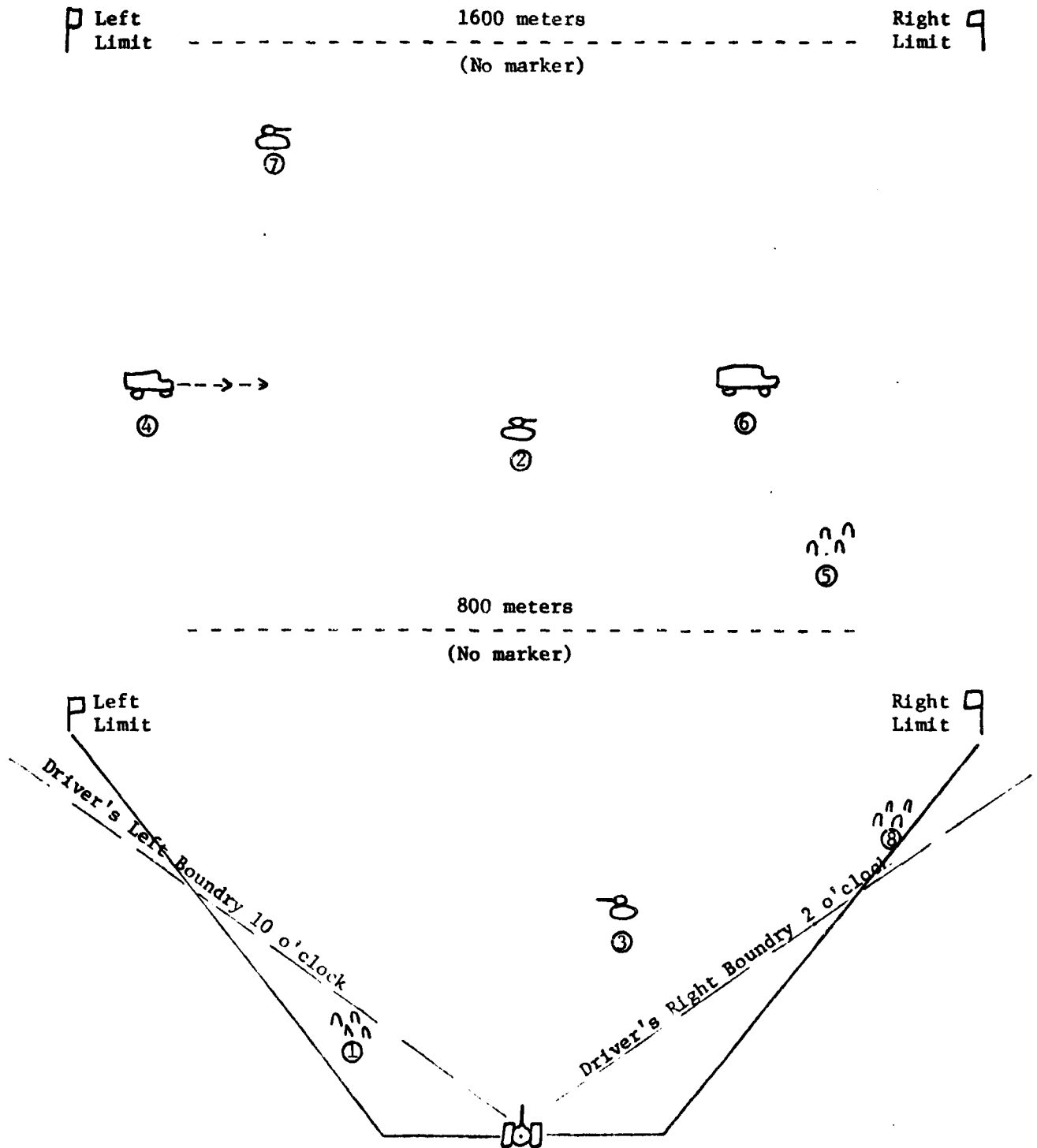
- a. Located and identified all targets in area within five minutes.
- b. Estimated range to all targets within  $\pm$  100 meters.
- c. Given location of all targets, within one hour deviation.
- d. Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

# TARGET ACQUISITION COURSE

Example. (Driver's target area of responsibility is from 10 o'clock to 2 o'clock)



1/2" = 100 meters

## DRIVER'S READINESS TEST

### PART E. TACTICAL DRIVING (HO)

**CONDITIONS.** Fully operational M60A1. Tactical driving course including obstacles (ditch and vertical incline) and simulated targets. Scenario of fire commands and driving commands to be given by TC.

**INSTRUCTIONS TO DRIVER.** "This is a test of your tactical driving ability. We are going on a simulated mission. You will drive buttoned up and you should listen and react to my commands when I give them; but you should also react as necessary if I fail to give you a command. Watch for targets and report them as you normally would."

#### TASKS.

Drive over varied terrain.  
Drive to defilade firing position upon enemy contact.  
Drive in response to fire commands.  
Acquire targets.  
\*Observe and sense rounds.

#### NOTES.

- a. Driver should not be given this test until he has passed Driver's Readiness Test, Parts A through D.
- b. Portions of Part B of the test that were failed previously can be retested as part of the preparation for this test.
- c. It is not necessary to perform the tasks in the order given.
- d. If available a grade of 50%-60% should be used for performance measures 2c and 2d. If such a grade is not available, attempt to use a grade steep enough to descend forward with the transmission in Reverse.
- e. See example layout of tactical driving course.
- f. See example target layout for sensing rounds.
- g. See Module D-5 for remedial training of deficiencies.
- h. Estimated time, 1 1/2 hours.

# PERFORMANCE MEASURES.

Yes No NA

## 1. DRIVE OVER VARIED TERRAIN

### a. Cross a Vertical Obstacle.

- . Warned crew members of the obstacle.
- . Pushed transmission shift lever up in L when speed reached 9 mph or less.
- . Met obstacle with both tracks simultaneously.
- . Applied sufficient acceleration to climb obstacle.
- . Continued to accelerate until tank started to counter balance.
- . Decelerated as tank counter balanced forward.
- . Did not attempt to steer when climbing obstacle.

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### b. Cross a Ditch.

- . Warned crew of ditch.
- . Pushed transmission shift lever up to L when speed reached 9 mph or less.
- . Decelerated as tank counter balanced into ditch.
- . Eased tank to bottom by braking and releasing brake.
- . Met bottom of ditch with both tracks simultaneously.
- . Accelerated tank as tracks struck bottom.
- . Decelerated tank as it pitched over top.

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### c. Ascend a Steep Grade.

- . Pushed transmission shift lever up to L position when speed reached 9 mph or less.
- . Accelerated to climb incline.
- . On steep grade (50%-60%) ascended backwards using reverse.

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### d. Descend a Steep Grade.

- . Pushed transmission lever up to L position when speed reached 9 mph or less.
- . Used brake to maintain engine speed at less than 2600 rpm.
- . On a steep grade (50%-60%) stopped tank, pulled transmission shift lever to REVERSE and allowed tank to move forward.
- . Accelerated to slow tank's descent, maintaining sufficient engine speed to keep engine above a stall.
- . Pulled steering wheel down counterclockwise to turn right, pulled steering wheel down clockwise to turn left.
- . Stopped tank if engine stalled.
- . Stopped and restarted the engine, if engine started to run backwards.

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Yes No NA

- . Pushed transmission shift lever up to NEUTRAL, maintained brake pressure, and allowed tank to slide down incline without steering if the engine started to run backwards and brakes would not stop the tank.

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## 2. PERFORM EVASIVE MANEUVERS UPON ENEMY CONTACT

### a. Follow TC Commands.

- . Took up correct firing position in response to TC's directions.
- . Followed route given by TC.

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### b. Begin Evasive Maneuvers on Own Initiative as Necessary.

- . Selected a hull defilade position where available.
- . Oriented hull toward target.
- . Selected a route with cover and concealment.

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## 3. DRIVE INTO DEFILADE FIRING POSITION UPON ENEMY CONTACT

- . Drove to initial defilade firing position following direction from TC.
- . Moved tank into the defilade position with front portion of tank toward target.
- . Drove vehicle into position slowly.
- . Coordinated with TC and Gunner in positioning tank as level as terrain permitted.
- . Brought vehicle to a smooth and gradual halt.

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## 4. DRIVE IN RESPONSE TO FIRE COMMANDS

### a. Drive During Coax Area Target Engagement.

- . Continued to drive in response to coax area target element in fire command.
- . Maintained steady rate of speed.
- . Maneuvered hull toward target.
- . Announced adverse terrain conditions.
- . Selected best available route.
- . Avoided obstacles and ditches.
- . Minimized directional changes.

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### b. Drive During .50 Caliber Area Target Engagement.

- . Continued to drive in response to .50 caliber, area target element in fire command.
- . Maintained steady rate of speed.
- . Maneuvered hull toward target.
- . Announced adverse terrain conditions.
- . Selected best available route.
- . Avoided obstacles and ditches.
- . Minimized directional changes.

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	Yes	No	NA
c. Drive to a Halt for Coax Point Target Engagement.			
. Maintained steady speed during initial part of coax, point target element in fire command.	—	—	—
. Maneuvered hull toward target.	—	—	—
. Announced adverse terrain conditions.	—	—	—
. Moved to a hull down firing position.	—	—	—
. Brought tank to a smooth gradual halt.	—	—	—
d. Drive to a Halt for .50 Caliber Point Target Engagement.			
. Maintained steady speed during initial part of .50 caliber, point target element in fire command.	—	—	—
. Maneuvered hull toward target.	—	—	—
. Announced adverse terrain conditions.	—	—	—
. Moved to a hull down firing position.	—	—	—
. Brought tank to a smooth gradual halt.	—	—	—
e. Drive to a Halt for Main Gun Target Engagement.			
. Maintained steady speed during initial part of main gun element in fire command.	—	—	—
. Maneuvered hull toward target.	—	—	—
. Announced adverse terrain conditions.	—	—	—
. Moved to a hull down firing position.	—	—	—
. Brought tank to a smooth gradual halt.	—	—	—
5. ACQUIRE TARGETS			
. Detected targets in assigned sector.	—	—	—
. Announced target type.	—	—	—
. Announced estimated range to target in 100's of meters.	—	—	—
. Announced direction to target by clock system.	—	—	—
6. OBSERVE AND SENSE ROUNDS			
. Announced correct sensing for Target 1.	—	—	—
. Announced correct sensing for Target 2.	—	—	—
. Announced correct sensing for Target 3.	—	—	—
. Announced correct sensing for Target 4.	—	—	—

#### SCORING.

To pass, Driver must have:

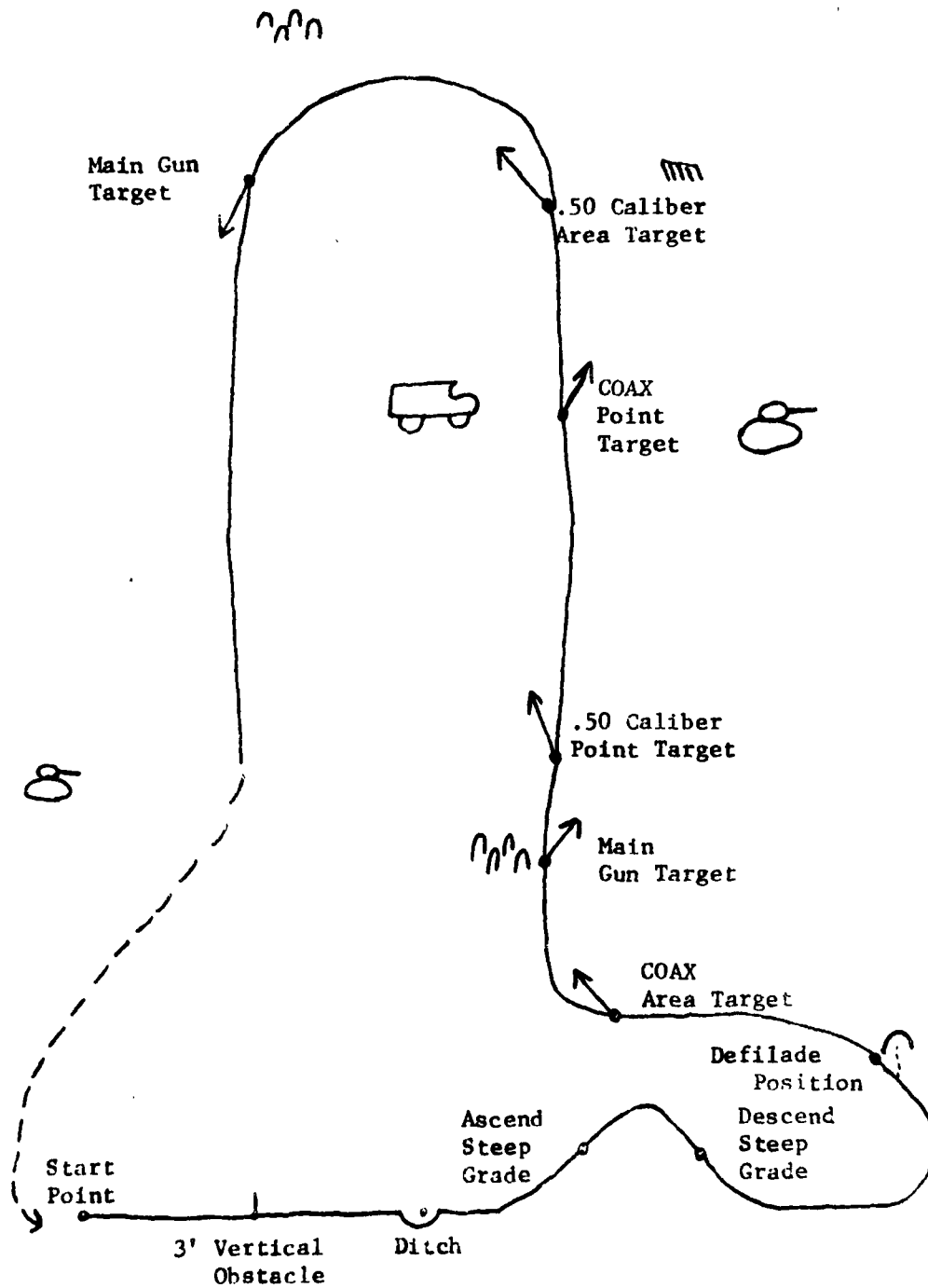
- Detected and reported all targets. Delay in detection is not cause for failure.
- Responded without hesitation to all fire commands.
- Correctly sensed each round.
- Been checked "yes" or "NA" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL



# TACTICAL DRIVING COURSE (Example)

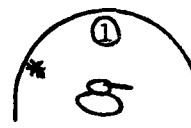


# TARGET LAYOUT FOR SENSING ROUNDS (Example)

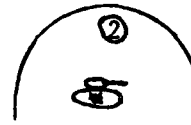
At the end of the tactical driving course the Driver will be directed to move to a firing position. Approximately 50 yards in front of the firing position will be four silhouette targets with a simulated tracer element positioned as a target hit or a target miss.

The TC will lay the gun on a target and give a fire command. The Gunner will identify the target, make a final precise lay, and simulate firing. The Gunner and TC will announce LOST and the Driver will immediately announce his sensings. (The scorer will act as TC, GN, and LD. The Driver will be buttoned up and use his M27 periscope to sense.

Tgt #1 (TC) GUNNER-BATTLESIGHT-TANK (GN) IDENTIFIED  
(LD) UP (TC) FIRE (GN) ON THE WAY (GN) LOST  
(TC) LOST (DV) OVER-LEFT



Tgt #2 (TC) GUNNER-SABOT-TANK (GN) IDENTIFIED (LD)  
UP (TC) FIRE (GN) ON THE WAY (GN) LOST  
(TC) LOST (DV) TARGET



Tgt #3 (TC) GUNNER-HEAT-PC (GN) IDENTIFIED (LD)  
UP (TC) FIRE (GN) ON THE WAY (GN) LOST  
(TC) LOST (DV) DOUBTFUL-RIGHT



Tgt #4 (TC) GUNNER-BATTLESIGHT-TANK (GN) IDENTIFIED  
(LD) UP (TC) FIRE (GN) ON THE WAY (GN)  
LOST (TC) LOST (DV) SHORT-RIGHT



APPENDIX B

LOADER'S READINESS TEST

## LOADER'S READINESS TEST

REQUIRED TIME: 7 1/2 hours

CROSS TRAINING: Tank Crew Gunnery Skills Test (TCGST) tasks, FM17-12-2 are indicated by an \*. Cross training tasks are indicated by a # symbol.

### PART A. WEAPONS MAINTENANCE (W)

Type: Written pre-tests for TEC Lessons.

020-171-1132-F (Cleaning, Inspection, and Lubrication Coax)

020-171-1133-F (Trouble Shooting Coax)

020-171-5229-F (Trouble Shooting M85 Machinegun)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

### PART B. WEAPONS MAINTENANCE (HO)

Type: Hands-On

Time: 1 hour.

Location: Company Area or UTS

Support: Tank with dummy rounds and TC Scorer

Scoring: 100% correct

PART C. MISSION PREPARATION (W)

Type: Written pre-tests for TEC Lessons.

020-171-5366-F (Before Operations Maintenance, Part 1)  
020-171-5367-F (Before Operations Maintenance, Part 2)  
020-171-5368-F (Before Operations and At Halt Maintenance  
Checks and Services)  
020-171-5369-F (After Operations Maintenance Checks and  
Services, Part 1)  
020-171-5370-F (After Operations Maintenance Checks and  
Services, Part 2)  
020-171-5331-F (Tank Ammo: Selecting Ammunition)  
020-171-5332-F (Tank Ammo: Handling, Main Gun)  
020-171-5352-F (Boresighting the Machineguns [Exclusive  
of M85 machinegun])

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART D. MISSION PREPARATION (HO)

Type: Hands-On

Time: 2 hours

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART E. COMBAT LOADING (W)

Type: Written pre-tests for TEC Lessons.

020-171-5346-F (105MM Gun: Loading)  
020-171-5347-F (105MM Gun: Misfire Procedures)  
020-171-5348-F (105MM Gun: Unloading)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

**PART F. COMBAT LOADING (HO)**

Type: Hands-On

Time: 1 1/4 hours

Location: Company Area or UTS

Support: Tank with dummy rounds and TC Scorer

Scoring: 100% correct

**PART G. TARGET ACQUISITION (W)**

Type: Written pre-tests for TEC Lessons

020-171-1611-F (Target Range Determination)

020-171-1612-F (Location and Reporting Targets)

020-171-1614-F (Target Acquisition Scanning Techniques)

935-171-0203-F (Armor Vehicle Recognition)

Time: 1 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

**PART H. LOCATING AND REPORTING TARGETS (HO)**

Type: Hands-On

Time: 3/4 hour

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

## LOADER'S READINESS TEST

### PART A. WEAPONS MAINTENANCE (W)

**CONDITIONS.** Loader is in a classroom and is administered TEC pre-tests 020-171-1132-F, 020-171-1133-F and 020-1715229-F.

**INSTRUCTIONS TO LOADER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number and today's date on the answer sheet. The test consists of three parts: Cleaning, Inspection, and Lubrication Coax (TEC Lesson 020-171-1132-F), Troubleshooting Coax (TEC Lesson 020-171-1133-F), and Troubleshooting M85 Machinegun (TEC Lesson 020-171-5229-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

### TASKS.

- Explain correct method of cleaning coax backplate assembly.
- Identify various compounds for cleaning coax barrel.
- Identify coax unserviceable parts.
- Identify various lubricants to use on coax.
- Identify coax parts that should be free of lubricants.
- Identify coax parts that are lubricated just prior to firing.
- Explain Loader's action upon hearing STOPPAGE announced first time and second time with a hot or a cold gun.
- Explain Loader's action upon hearing STOPPAGE announced second time with a hot gun, and the coax cannot be cleared quickly.
- Explain Loader's action if coax has a ruptured cartridge and the stoppage must be corrected quickly.
- Explain Loader's action (in TC position) upon initial stoppage of M85.
- Explain Loader's action (in TC position) when hot M85 fails to fire and immediate action has failed and a round remains in the chamber.
- Explain Loader's action (in TC position) when a M85 gun fails to fire after two attempts.
- Explain Loader's action (in TC position) if M85 has a ruptured cartridge and there is no spare barrel.
- Explain Loader's action (in TC Position) after M85's extractor has been driven through the ruptured cartridge.

### NOTES.

- a. See Module L-1 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.

## LOADER'S READINESS TEST

### PART A: WEAPONS MAINTENANCE

The Test Proctor will administer the following TEC Lesson pre-tests and the Loader will answer only those questions so indicated:

- . Cleaning, Inspection, and Lubrication Coax (020-171-1132-F)
  - Loader will answer all question.
- . Troubleshooting Coax (020-171-1133-F)
  - Loader will answer all questions.
- . Troubleshooting M85 Machinegun (020-171-5229-F)
  - Loader will answer all questions.



LOADER'S READINESS TEST

PART A: WEAPONS MAINTENANCE

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and 020-171-  
5229-F.

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1132-F

1.

2.a.

b.

c.

3.a.

b.

c.

4.

5.

6.

7.

8.

020-171-1133-F

1.

2.

3.

4.

5.

020-171-5229-F

1.

2.

3.

4.

5.

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

LOADER'S READINESS TEST

PART A: WEAPONS MAINTENANCE

PRE-TEST ANSWER KEY

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and 020-171-  
5229-F.

ANSWER KEY

M73/M219 MACHINEGUN: CLEANING, INSPECTION AND LUBRICATION  
(020-171-1132-F)

1. Wipe it off with a clean, dry cloth.
- 2.a. A. Solvent (SD)
  - b. B. RBC
  - c. C. RBC
- 3.a. A. (Barrel cracked)
  - b. B. (Camway burred)
  - c. C. (Guide rod is bent)
4. C. (LSA)
5. E. (LAW)
6. B. (PL Special)
7. A. (The barrel)
8. Both

TROUBLESHOOTING THE COAX  
(020-171-1133-F)

1. A
2. B
3. A
4. C
5. Change the barrel

TROUBLESHOOTING THE M85 MACHINEGUN  
(020-171-5229-F)

1. Wait five seconds, charge gun, attempt to fire (or equivalent answer).
2. Wait five minutes (or equivalent answer).
3. Wait five seconds, clear gun, hand function, reload and attempt to fire (or equivalent answer).
4. C. Insert extractor into bolt, fire manually.
5. B. Pull the charger handle back so that the extractor and cartridge are just clear of the chamber.

SCORING KEY.

Award 5 points for each correct response (110 points possible).

PASSING SCORE = 100 points

## LOADER'S READINESS TEST

### PART B. WEAPONS MAINTENANCE (HO)

**CONDITIONS.** An M60A1 tank with coax and M85 machineguns mounted, and complete gun-tool roll stowed according to unit loading plan.

**INSTRUCTIONS TO LOADER.** "This test is in three parts. In the first part you are to remove the coax from the tank, disassemble and assemble it, and remount the coax in the tank. In the second part you will do the same for the M85. In the third part you will remove, disassemble, assemble and install the breechblock. You will have 3 minutes for disassembly and 3 minutes for assembly of each machinegun, and 6 minutes for removal and disassembly of the breechblock and 6 minutes for assembly and installation of the breechblock. I will alert you before I start timing on each of these tasks. I will not assist you during the test. . . Do you have any questions? Work quickly, but carefully. . . Ready? . . . Begin. . . ."

#### TASKS.

- Remove the coax from a tank.
- \*Disassemble the coax
- Inspect the coax
- \*Assemble the coax
- Check operation of the coax.
- Mount the coax in a tank.
- Remove the M85 from a tank.
- # \*Disassemble the M85.
- Inspect the M85.
- # \*Assemble the M85.
- Check operation of the M85.
- Mount the M85 in a tank.
- \*Disassemble the main gun breechblock.
- \*Assemble the main gun breechblock.

#### NOTES.

- a. Loader should not be given this task until he has passed Loader's Readiness Test, Part A.
- b. Remedial training of tasks failed should be provided on the spot, but after the Loader has completed all of Part B. See Module L-2 for remedial training.
- c. All performance measures and steps within each task must be performed in the order given.
- d. Estimated time, 1 hour.

# PERFORMANCE MEASURES.

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. REMOVE THE COAX FROM A TANK			
. Disconnected electrical lead from solenoid.	___	___	___
. Loosened three support set screws in collar on gun mount cover shield.	___	___	___
. Removed machinegun retainer.	___	___	___
. Removed machinegun.	___	___	___
. Removed spent cartridge bag.	___	___	___
. Removed case ejection shield.	___	___	___
2. DISASSEMBLE THE COAX ( <u>3 minutes</u> )			
. Removed barrel and jacket assembly from receiver.	___	___	___
. Separated barrel from jacket assembly.	___	___	___
. Removed cover assembly.	___	___	___
. Removed feed tray.	___	___	___
. Removed guide rod springs while holding barrel extension forward.	___	___	___
. Separated guide rods from guide rod springs.	___	___	___
. Removed backplate assembly.	___	___	___
. Retracted barrel assembly.	___	___	___
. Depressed buffer support lever and removed barrel extension.	___	___	___
. Removed breechblock from barrel extension assembly.	___	___	___
. Removed retainer clip and charger assembly from projecting stud.	___	___	___
3. INSPECT THE COAX			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust and foreign matter.	___	___	___
. Checked all moving parts for looseness, binding, wear or damage.	___	___	___
4. ASSEMBLE THE COAX ( <u>3 minutes</u> )			
. Installed charger assembly.	___	___	___
. Placed breech block assembly in barrel extension.	___	___	___
. Installed barrel extension.	___	___	___
. Installed backplate assembly.	___	___	___
. Joined guide rods and guided rod springs.	___	___	___
. Installed feed tray.	___	___	___
. Installed cover assembly.	___	___	___
. Joined barrel to jacket assembly.	___	___	___
. Joined barrel and jacket assembly with receiver.	___	___	___

	Yes	No	NA
5. CHECK OPERATION OF THE COAX			
. Placed safety in FIRE position.	___	___	___
. Charged weapon to lock moving parts to rear.	___	___	___
. Allowed barrel extension to ease forward by keeping tension on charging handle and depressing manual firing trigger.	___	___	___
6. MOUNT THE COAX IN A TANK			
. Physically examined gun mount cover shield to see that three support set screws were backed off flush with collar of gun port.	___	___	___
. If set screws were not flush with collar of gun port, unscrewed set screws so that flash suppressor of machinegun did not hit set screws when inserted through machinegun port.	___	___	___
. Had the Gunner, if necessary, depress the gun tube so that it was horizontal or slightly below.	___	___	___
. Placed the shell ejection shield on the shield support and fastened six snap fasteners which hold it in place.	___	___	___
. Installed spent cartridge bag on empty cartridge bag support by fastening eight snap fasteners which hold it in place.	___	___	___
. Slid machinegun into machinegun port until rearmost portion of jacket assembly (disconnecter holes) were flush with machinegun bracket assembly.	___	___	___
. Placed machinegun retainer over rearmost position of jacket assembly, alining it with machinegun bracket assembly.	___	___	___
. Inserted two cap screws and lock washers in their respective holes and tightened them down.	___	___	___
. Plugged in machinegun electrical lead to solenoid on machinegun's backplate assembly.	___	___	___
7. REMOVE THE M85 FROM A TANK			
. Cleared the weapon and left the Safety in SAFE (S).	___	___	___
. Removed the M36 periscope.	___	___	___
. Disconnected the solenoid lead connector from the backplate assembly.	___	___	___
. Opened cradle access doors and removed barrel.	___	___	___
. Manually elevated cradle 20°.	___	___	___
. Removed rear mounting pin and slid machinegun out of cradle.	___	___	___
. Passed machinegun out of turret through cupola hatch.	___	___	___
. Replaced rear mounting pin in cradle.	___	___	___
. Replaced M36 periscope.	___	___	___

	Yes	No	NA
8. DISASSEMBLE THE M85 (3 minutes)			
. Cleared weapon.	—	—	—
. Removed barrel.	—	—	—
. Removed backplate group.	—	—	—
. Disengaged retainer lug of guide rod.	—	—	—
. Removed bolt buffer group.	—	—	—
. Separated helical spring, buffer sleeve and spring and guide rod.	—	—	—
. Removed feed and ejector assembly.	—	—	—
. Removed sear assembly.	—	—	—
. Removed barrel extension and bolt assembly.	—	—	—
. Separated bolt assembly from barrel extension.	—	—	—
. Removed hand charger assembly.	—	—	—
. Removed accelerator quick release pin.	—	—	—
. Removed cover assembly and feed tray assembly.	—	—	—
. Separated cover assembly from feed tray assembly.	—	—	—
. Removed accelerator assembly.	—	—	—
9. INSPECT M85			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust and foreign matter.	—	—	—
. Checked all moving parts for looseness, binding, wear or damage.	—	—	—
10. ASSEMBLE THE M85 (3 minutes)			
. Installed accelerator assembly.	—	—	—
. Replaced cover assembly on feed tray assembly.	—	—	—
. Installed cover assembly and feed tray assembly.	—	—	—
. Installed accelerator quick release pin.	—	—	—
. Installed hand charger assembly.	—	—	—
. Assembled bolt assembly and barrel extension.	—	—	—
. Replaced sear assembly.	—	—	—
. Replaced feed and ejector assembly.	—	—	—
. Assembled helical spring, buffer sleeve and spring and guide rod.	—	—	—
. Installed bolt buffer group.	—	—	—
. Engaged retainer lug or guide rod.	—	—	—
. Replaced the backplate group.	—	—	—
. Installed the barrel.	—	—	—
11. CHECK OPERATION OF THE M85			
. Placed Safety in FIRE (F).	—	—	—
. Charged weapon to lock moving parts to the rear.	—	—	—
. Kept tension on charger handle and pulled trigger extension handle, depressing trigger to allow bolt assembly to close slowly.	—	—	—



Yes No NA

- | Year | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 |      |

**a. Removal**

- [illegible]

- . Returned operating handle to latched position.
- . Lowered breechblock until breechblock crank pivot was free of the T-slot, and removed pivot.
- . Lowered breechblock until breechblock was on turret floor.
- . Released chain hoist from eye bolt.
- . Removed right and left extractors from breech ring.

Yes No NA

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. Disassembly

- . Depressed firing contact plate plunger and turned firing contact plate counterclockwise until arrows on plate and breechblock were aligned with each other.
- . Removed firing contact plate, firing contact plate plunger, and spring.
- . Removed plastic washer, firing contact, and firing contact sleeve.
- . Removed retractor pivot pin and firing pin retractor from retractor guide.
- . Removed screw, washers, and clamp securing retractor driver to bottom of breechblock. (Use Allen wrench to remove screws.)
- . Removed retractor driver, retractor driver shaft, and spring.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. ASSEMBLE THE MAIN GUN BREECHBLOCK (6 minutes)

a. Assembly

- . Installed retractor driver spring, shaft, and retractor driver into bottom of the breechblock.
- . Affixed retractor group to bottom of breechblock by installing securing clamp, washers, and screw with Allen wrench.
- . Inserted firing contact sleeve, firing contact, plastic washer, spring, and firing contact plate plunger into breechblock.
- . Installed firing pin retractor into retractor guide and secured it with retractor pivot pin.
- . Replaced firing contact plate by aligning arrow and depressing and rotating plate clockwise until firing contact plate plunger engaged locking notch in plate.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. Installation

- . Installed right and left extractors into extractor pivots in the breech ring.
- . Inserted chain hoist into eye bolt on breechblock.

\_\_\_\_\_  
\_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Raised breechblock and guided it into breech ring until breechblock came in contact with extractor plungers.	___	___	___
. Depressed plungers and moved breechblock upward.	___	___	___
. Installed breechblock crank pivots in breechblock crank.	___	___	___
. Inserted pivot in breechblock T-slot.	___	___	___
. Tripped extractors with the screwdriver and raised the breechblock to the closed position.	___	___	___
. Inserted small screwdriver or rod into the hole in breechblock crank stop and slid stop to rear position.	___	___	___
. Jiggled crank stop back and forth to assure that plunger was seated in its recess.	___	___	___
. Released tension on the chain hoist.	___	___	___
. Turned adjuster clockwise until plunger entered first recess.	___	___	___
. Removed chain hoist and eye bolt.	___	___	___
. Installed retractor guide with firing pin retractor and firing pin in its well by pushing guide forward until it was flush with inner surface of well.	___	___	___
. Installed firing pin spring and firing pin spring retainer.	___	___	___
. Depressed plunger, and twisted retainer clockwise until plunger was seated in its recess.	___	___	___
. Opened and closed breech several times to test for binding or shock.	___	___	___
. Adjusted tension on the closing spring to contact any binding or shock in breech operation.	___	___	___

#### SCORING.

To pass, Loader must have:

- a. Checked operation of the coax and M85 machinegun (without being told) after assembling them.
- b. Completed disassembly and assembly of the coax and M85 machinegun within time specified.
- c. Been checked "Yes" or "NA" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## LOADER'S READINESS TEST

### PART C. MISSION PREPARATION (W)

**CONDITIONS.** The Loader is in a classroom and is administered TEC pre-tests 020-171-5366-F through 020-171-5370-F, 020-171-5331-F, 020-171-5332-F, and 020-171-5352-F.

**INSTRUCTIONS TO LOADER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of three parts: Before, During, and After Operations Maintenance Checks and Services (TEC Lessons 020-171-5366-F through 020-171-5370-F), Tank Ammunition: Selecting and Handling (TEC Lessons 020-171-5331-F and 020-171-5332-F), and Boresighting the Machinegun [Exclusive of M85] (TEC Lesson 020-171-5352-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

Identify deficiencies in the tank suspension system.

- |                   |                                 |
|-------------------|---------------------------------|
| . road wheels     | . driving sprockets             |
| . center guides   | . shocks                        |
| . support rollers | . track adjusting link assembly |
| . torsion bars    | . track tension                 |

Identify deficiencies in:

- |                  |                      |
|------------------|----------------------|
| . battery cables | . fire extinguishers |
| . hatch latches  | . oil coolers        |

Explain the meaning of various oil dip stick markings.

Explain safety precautions for refueling.

Identify various types of main gun ammunition.

Identify various types of machinegun ammunition.

Identify correct method of linking machinegun ammunition.

Match various types of main gun ammunition with various types of targets.

Explain correct method of carrying main gun ammunition.

Explain correct method of passing main gun ammunition into the turret.

List three characteristics of a good coax boresighting target.

Indicate correct actions to take before removing coax receiver.

Explain actions to be taken on solenoid wire and protective shield prior to removing the coax receiver.

Explain reason for alining the main gun with boresight target prior to boresighting the coax.

Explain steps to aline the coax and infinity sight with main gun alined on boresight panel.

NOTES.

- a. See Module L-3 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.

## LOADER'S READINESS TEST

### PART C: MISSION PREPARATION

The Test Proctor will administer the following TEC Lesson pre-tests and the Loader will answer only those questions so indicated:

- . Before, During, and After Operations Maintenance Checks and Services (020-171-5366-F through 020-171-5370-F).
  - Loader will answer questions 1, 2, 4, 5, and 7.
- . Tank Ammunition: Selecting and Handling (020-171-5331-F and 020-171-5332-F).
  - Loader will answer all questions for 020-171-5331-F and questions 3, 4, and 6 for 020-171-5332-F.
- . Boresighting the Machineguns (020-171-5352-F).
  - Loader will answer questions 1, 2, 3, 4, and 5.

LOADER'S READINESS TEST

PART C: MISSION PREPARATION

TEC Lessons 020-171-5366-F  
through 020-171-5370-F, 020-  
171-5331-F, 020-171-5332-F,  
and 020-171-5352-F.

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5366-F through  
020-171-5370-F

1.a.

b.

c.

d.

e.

f.

g.

h.

i.

j.

k.

l.

m.

2.a.

b.

c.

4.

5.a.

b.

c.

7.

020-171-5331-F

1.a.

b.

c.

d.

e.

f.

2.

3.a. \_\_\_\_\_ Tracer

b. \_\_\_\_\_ AP (Armor piercing)

c. \_\_\_\_\_ Ball

d. \_\_\_\_\_ APIT (Armor piercing-incendiary tracer)

e. \_\_\_\_\_ API (Armor piercing-incendiary)

4.

5.

6.

7.

8.

9.

10.

11.



020-171-5332-F

3.

4.

6.a.

b.

c.

020-171-5352-F

1.a.

b.

c.

2.a.

b.

c.

3.a.

b.

4.

5.a.

b.

c.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## LOADER'S READINESS TEST

### PART C. MISSION PREPARATION

#### PRE-TEST ANSWER KEY

TEC Lessons 020-171-5366-F  
through 020-171-5370-F, 020-  
171-5331-F, 020-171-5332-F  
and 020-171-5352-F.

#### ANSWER KEY

#### BEFORE, DURING, AND AFTER OPERATIONS MAINTENANCE AND SERVICES (020-171-5366-F through 020-171-5370-F)

1. For each of the pictures in question one the soldier should have identified the problem, if any, and stated the action needed.
  - a. This road wheel is cracked and must be replaced. Report it on a DA 2404 to organizational maintenance. (Reference lesson 5366.)
  - b. OK. (Reference lesson 5366.)
  - c. The support roller bearing is frozen up; the support roller and the bearing must be replaced. Report this on a DA 2404. (Reference lesson 5366.)
  - d. The road wheel seal is leaking and must be replaced. Report this on a DA 2404. (Reference lesson 5366 and 5368.)
  - e. This visual shows a broken torsion bar. Report it on a DA 2404. (Reference lesson 5366.)
  - f. OK. (Reference lesson 5366.)
  - g. This sprocket is excessively worn and must be replaced. Report it on a DA 2404. (Reference lesson 5366.)
  - h. OK. (Reference lesson 5366.)
  - i. This shock is leaking and should be replaced. Report this situation on a DA 2404. (Reference lesson 5366.)
  - j. In this picture the track tension is too tight. It must be adjusted by the crew. (Reference lesson 5370.)
  - k. The hold open latch is not in its proper up position. Lock the hatch securely up or down. (Reference lesson 5367.)

1. There is no green inspection tag on this extinguisher. Turn this one in to organizational maintenance for inspection. (Reference lesson 5367.)
- m. Replace the frayed cable on this battery. (Reference lesson 5370.)
2. Here are the actions you must take for each situation:
  - a. Add oil to the full mark. (Reference lesson 5366.)
  - b. Add oil to the add mark. (Reference lesson 5366.)
  - c. Notify organizational maintenance, you may have to have some oil drained. (Reference lesson 5366.)
4. When refueling have a man stand by with a fire extinguisher, turn the master battery switch off, ground the hose nozzle to the tank, and never allow anyone to smoke in the immediate area. (Reference lesson 5369.)
5. You should check for oil leaks, obstructed screen, and loose mounting bolts. (Reference lesson 5369.)
7. The red groove means that the track adjusting link is extended as far as it can be. A track block should be removed and the track tension readjusted. (Reference lesson 5370.)

TANK AMMUNITION: SELECTING AND HANDLING  
(020-171-5331-F and 020-171-5332-F)

020-171-5331-F

1. A - SABOT  
B - HEAT  
C - HEAT  
D - HEP  
E - SMOKE  
F - BEEHIVE
2. A
3. C Trace  
B AP  
A Ball  
E APIT  
D API
4. A
5. C

- 6. D
- 7. C
- 8. E
- 9. D
- 10. C
- 11. B

020-171-5332-F

- 3. A
- 4. A
- 6.a. Remove round from tank.
- b. Place in misfire bunker.
- c. Notify supervisory personnel.

BORESIGHTING THE MACHINEGUNS (COAX)  
(020-171-5352-F)

- 1.a. Known range (as close to 1200 meters as possible)
  - b. Right angles
  - c. Permanent
- 2.a. safe
  - b. unloaded
  - c. forward
- 3.a. A - Solenoid wire being removed
  - B - Protective shield being removed
  - b. B, then A
- 4. Aline the main gun on the target aiming point.
- 5.a. Loosen the vertical mounting screws and vertically aline the coax gun bore on the target aiming point, using the vertical adjusting set-screws. Retighten vertical mounting screws.

- b. Loosen the horizontal bracket mounting screws and horizontally aline the coax gun bore on the target aiming point, using the horizontal adjusting setscrews. Retighten the horizontal bracket mounting screws.
- c. Adjust the infinity sight reticle with the infinity sight boresight knobs, so that the reticle encircles the target aiming point.

**SCORING KEY.**

Award 5 points for each correct response (285 points possible).

**PASSING SCORE = 255 points.**

## LOADER'S READINESS TEST

### PART D. MISSION PREPARATION (HO)

**CONDITIONS.** M60A1 tank with BII, situated on level ground. Gun tube is aimed at a suitable boresight target, but slightly out of alinement with respect to target. An Ammunition Stowage Plan and dummy rounds (3 - APDS, 3 - HEAT, 2 - HEP, 1 belt empty 7.62 machinegun, and 1 belt empty .50 caliber machinegun) are located next to the tank. All main gun ammunition stowage areas are blocked off with the exception of eight slots in the ready rack; empty slots should correspond to the stowage plan and type of dummy rounds. Two dimensional cardboard representations of 7.62 mm and .50 caliber machinegun ammunition boxes are used for stowage of machinegun ammunition. In addition an AN/VRC-12 or AN/VRC-64 and a CVC helmet with intercommunication components are located next to the tank. The tank has loose track tension.

**INSTRUCTIONS TO LOADER.** "Assume we are preparing the tank for a combat mission. You are to perform the following Loader tasks (read list of tasks). I realize you would normally perform some additional tasks as the Loader in this situation, but these are the ones you are being tested on today. Perform each task when I instruct you to do so. I will observe and score your performance, and I will serve as Driver, Gunner or TC as needed."

#### TASKS.

- Inspect suspension system for deficiencies.
- Inspect battery cables, hatch latches, fire extinguishers and oil coolers for deficiencies.
- Explain safety precautions for refueling.
- \*Perform before-operations checks and services on engine and transmission oil levels.
- \*Check track tension.
- \*Adjust track tension.
- Prepare tank for boresighting.
- Check boresight alinement of main gun.
- \*Boresight and zero coax machinegun.
- \*Stow main gun rounds according to Ammunition Stowage Plan.
- \*Stow machinegun ammunition according to Ammunition Stowage Plan.
- \*Stow coax ammunition in the ready (banana) box.
- Install and operate the AN/VRC-12 or AN/VRC-64 radio.
- Operate tank intercommunications system.
- \*Perform main gun prepare to fire procedures.
- Check operation of M3 heater.

# NOTES.

- a. Loader should not be given this test until he has passed Loader's Readiness Tests, Parts A, B and C.
- b. Remedial training on tasks failed should be provided on-the-spot but after the Loader has completed all of Part D. See Module L-4 for remedial training.
- c. It is not necessary to perform the tasks in the order given, however, the steps within each task must be performed in order.
- d. Estimated time, 2 hours.

## PERFORMANCE MEASURES.

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. INSPECT TANK SUSPENSION SYSTEM FOR DEFICIENCIES			
. Road wheels.	___	___	___
. Center guides.	___	___	___
. Support rollers.	___	___	___
. Torsion bars.	___	___	___
. Driving sprockets.	___	___	___
. Shocks.	___	___	___
. Track adjusting link assembly.	___	___	___
2. INSPECT OTHER COMPONENTS FOR DEFICIENCIES			
. Battery cables.	___	___	___
. Hatch latches.	___	___	___
. Fire extinguishers.	___	___	___
. Oil coolers.	___	___	___
3. EXPLAIN SAFETY PRECAUTIONS FOR REFUELING			
. Indicated one crew member stands by with a fire extinguisher.	___	___	___
. Indicated Master Battery switch is in the OFF position.	___	___	___
. Indicated hose nozzle must be grounded to the tank.	___	___	___
. Indicated no smoking is allowed in immediate area.	___	___	___
4. PERFORM BEFORE-OPERATIONS CHECKS AND SERVICES ON TANK ENGINE AND TRANSMISSION OIL LEVELS			
. Checked engine and transmission oil levels.	___	___	___
. Added engine oil until presence of oil is indicated on gage (if required).	___	___	___
. Added transmission oil until level indicated on gage is to the ADD mark (if required).	___	___	___
. Told Driver to start engine.	___	___	___

Yes No NA

- . Waited until engine was warm and idling at 700 - 750 rpm. \_\_\_\_\_
- . Added or drained engine oil until level indicated on gage was to the FULL mark (if required). \_\_\_\_\_
- . Added or drained transmission oil until level indicated on gage was to the FULL mark (if required). \_\_\_\_\_

5.a. CHECK TRACK TENSION (T97 TRACK)

- . Directed Driver to coast to a stop so that a track link was centered on #2 support roller. \_\_\_\_\_
- . Coordinated with Driver by arm and hand signals so that tank coasted to a stop with track link in proper position. \_\_\_\_\_
- . Raised the track with a crowbar at number two support roller and placed a block (1" thick by 6" square) between number two support roller and track link. \_\_\_\_\_
- . Measured clearance between bottom of track and top of a string or straight edge between support rollers: Acceptable clearance is 1/4 to 5/16 inch (midway between Nos. 2 and 3 support rollers). \_\_\_\_\_

b. CHECK TRACK TENSION (T142 TRACK)

- . Directed Driver to a stop so that a track link is centered on the #2 support roller. \_\_\_\_\_
- . Coordinated with Driver by arm and hand signals so that tank coasted to a stop with track link in proper position. \_\_\_\_\_
- . Removed dirt and mud from outboard end connectors between first and second support rollers. \_\_\_\_\_
- . Placed a string with weight on both ends over end connectors. \_\_\_\_\_
- . Measure the distance between the string and the end connectors at the mid point between the support rollers to insure that the distance is between 7/16 and 1/2 inches. \_\_\_\_\_

6. ADJUST TRACK TENSION

- . Removed track and adjusting link screw and washer from top of track adjusting link. \_\_\_\_\_
- . Used track adjusting wrench on track adjusting link and pulled up to increase track tension (right side) or pushed down to decrease track tension (right side). (Reversed directions for left side). \_\_\_\_\_
- . Track adjusting link was not extended beyond red painted groove. \_\_\_\_\_
- . Adjusted track tension to 1/4 to 5/16 inch in tolerance. \_\_\_\_\_
- . Installed lockwasher and lockscrew and tightened with wrench. Lockscrew was tightened until fully seated on the shoulder. \_\_\_\_\_



Yes No NA

7. PREPARE TANK FOR BORESIGHTING

- . Placed black thread over witness lines on muzzle end of main gun and secured thread tautly.
- . Removed firing mechanism from breechblock.
- . Centered right telescope of binocular M17A1 over firing pin hole.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. CHECK BORESIGHT ALINEMENT OF MAIN GUN

On request from Gunner to confirm that muzzle cross threads are on aiming point:

- . Checked alinement of main gun by sighting through firing pin hole with M17A1 binocular to see if cross threads lay on aiming point.
- . Reported gun out of alinement and assisted Gunner to aline it.

\_\_\_\_\_  
\_\_\_\_\_

9. BORESIGHT AND ZERO COAX

- . Removed the solenoid electrical lead from the machinegun backplate assembly by pulling the solenoid plug down.
- . Pulled the right disconnecter ring rearward to disengage disconnecter pin from disconnecter hole.
- . Rotated receiver downward and pulled rearward until disengaged from mounting block.
- . Loosened support setscrews located in the gun mount cover shield collar approximately 1 1/2 turns.
- . Selected target employed to boresight main gun with a clearly defined right angle at a distance of 1200 meters.
- . Alined machinegun bore vertically on target while viewing aiming point through right binocular M17A1 so as to adjust machinegun elevation alinement with bore of main gun by loosening or tightening adjusting screws.
- . Alined the machinegun bore horizontally while viewing aiming point through right binocular M17A1 so as to adjust machinegun azimuth alinement with bore of the main gun by loosening or tightening front end and rear horizontal adjusting screws.
- . Insured that all lock and jam nuts are tightened securely.
- . Adjusted support setscrews, in gun mount cover shield collar until they contacted flash suppressor body then backed them off 1/4 to 1/2 turn.

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10. STOW MAIN GUN ROUNDS ACCORDING TO AMMUNITION STOWAGE PLAN

Determined, by reference to Ammunition Stowage Plan and present load, how many of each type of round needed.

\_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Called out to assisting crewman how many of a given type of round is wanted.	_____	_____	_____
. Insisted that round be handed in through turret nose down.	_____	_____	_____
. Round stowed in:			
- Ready rack by placing primer end down, swinging hinge of holder up and to left, pulling out spring loaded knob on rod of holder, sliding hinge slot over rod behind knob, and releasing the knob.	_____	_____	_____
- Tubular stowage rack by pushing round in nose first, swinging handle lock over primer end of round, and rotating handle lock securely in place.	_____	_____	_____
- Turret bustle by seating round with nose toward inside of turret, swinging hinge up and to left, pulling up clamp and slotting hinge in place below clamp, and pulling clamp down.	_____	_____	_____
. Completed stowage of rounds one type at a time.	_____	_____	_____
<b>11. STOW MACHINEGUN AMMUNITION ACCORDING TO AMMUNITION STOWAGE PLAN</b>			
. Determined, by reference to Ammunition Stowage Plan and present load, how much of each ammunition is needed.	_____	_____	_____
. Called out to assisting crewman how much of a given type ammunition is needed.	_____	_____	_____
. Stowed 15 boxes of 7.62 coax ammunition on the turret platform floor. (Use cardboard representation.)	_____	_____	_____
. Stowed 600 rounds of 7.62 coax ammunition in the ready-round (banana) ammunition box. (See task 12.)	_____	_____	_____
. Stowed 8 boxes of .50 caliber ammunition on the turret platform floor. (Use cardboard representation.)	_____	_____	_____
. Stowed 180 rounds of .50 caliber ammunition in the ready-round ammunition box.	_____	_____	_____
<b>12. STOW COAX AMMUNITION IN READY (banana) BOX</b>			
. Removed ammunition from metal packing box.	_____	_____	_____
. Inspected ammunition for serviceability and dirt.	_____	_____	_____
. Cleaned ammunition if required.	_____	_____	_____
. Linked 600 rounds together in one belt.	_____	_____	_____
. Opened ready box cover.	_____	_____	_____
. Placed 600 round belt in ready box with projectile end of round toward turret wall.	_____	_____	_____
. Fed at least ten rounds of ammunition through ammunition chute in ready box cover.	_____	_____	_____
. Closed ready box cover.	_____	_____	_____

- |  | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|--|------------|-----------|-----------|
| 13. INSTALL AND OPERATE AN/VRC-12 OR AN/VRC-64 RADIO<br>(NOTE: Scorer conducts test on the type radio Loader has in his tank.)                                     |            |           |           |
| a. Install AN/VRC-12 Radio   |            |           |           |
| . Placed receiver-transmitter (RT-246) on mount (MT-1029/VRC) and tightened clamps to lock receiver-transmitter on mount.  |            |           |           |
| . Connected antenna cable (CG-1773/U) to ANT receptacle on the receiver-transmitter.   |            |           |           |
| . Connected control cable assembly (CX-4722/VRC) to ANT CONT receptacle on receiver-transmitter.   |            |           |           |
| . Placed receiver (R-442) on mount (MT-1898/VRC) and tightened clamp to lock receiver on mount.  |            |           |           |
| . Connected antenna cable (CG-1773/U) to ANT receptacle on receiver.   |            |           |           |
| . Assembled antenna sections and screwed bottom section into antenna base (MX-6707/VRC).   |            |           |           |
| b. Operate AN/VRC-12 Radio   |            |           |           |
| . Told Driver to turn ON Master Battery switch.  |            |           |           |
| . Set amplifier (AM-1780/VRC) MAIN PWR switch to OTHER.  |            |           |           |
| . Set receiver-transmitter (RT-246) POWER switch to LOW or HIGH.   |            |           |           |
| . Set amplifier (AM-1780/VRC) POWER CKT BKR switch to ON.  |            |           |           |
| . Set receiver (R-442) POWER switch to ON.   |            |           |           |
| c. Install AN/VRC-64 Radio   |            |           |           |
| . Placed amplifier-power supply (AM2060/FRC) on mount (MT-1029/VRC) and tightened clamps to lock amplifier-power supply on mount.                                  |            |           |           |
| . Placed receiver-transmitter (RF-841/PRC-77) on amplifier-power supply (AM-2060/GRC) and tightened clamps to lock receiver-transmitter on amplifier-power supply. |            |           |           |
| . Connected Cable Assembly Special Purpose (CX-4655/GRC) to amplifier-power supply SET POWER connector and the receiver-transmitter POWER connector.               |            |           |           |
| . Connected Cable Assembly (CG-1773/U) to receiver-transmitter ANT connector.  |            |           |           |
| . Assembled antenna sections and screwed bottom section into antenna base (MX-6707/VRC).   |            |           |           |
| d. Operate AN/VRC-64 Radio   |            |           |           |
| . Told Driver to turn ON Master Battery switch.  |            |           |           |
| . Set amplifier-power supply (AM-2060/GRC) PWR switch to ON.   |            |           |           |

- |   | Yes | No  | NA  |
|---|-----|-----|-----|
| . Turned receiver-transmitter (RT-841/PRC-77) VOLUME control fully clockwise. | ___ | ___ | ___ |
| . Turned amplifier (AM-1780/VRC) MAIN PWR switch to NORM.                     | ___ | ___ | ___ |
| . Set POWER CKT BKR switch to ON.   | ___ | ___ | ___ |

(Loader will perform measures on either the AN/VRC-12 or AN/VRC-64 radio.)

#### 14. OPERATE TANK INTERCOMMUNICATIONS SYSTEM

- |  |     |     |     |
|--|-----|-----|-----|
| . Adjusted CVC helmet to head.   | ___ | ___ | ___ |
| . Insured CVC helmet radio-interphone switch was in center position.               | ___ | ___ | ___ |
| . Connected interphone connector to plug at left bottom of control box.            | ___ | ___ | ___ |
| . Connected radio/audio connector to plug at right bottom of control box.          | ___ | ___ | ___ |
| . Placed control box Monitor switch in either the ALL, A, INT ONLY, or B position. | ___ | ___ | ___ |
| . Transmitted to TC, "Loader Ready."   | ___ | ___ | ___ |

#### 15. PERFORM MAIN GUN PREPARE-TO-FIRE PROCEDURES

On command "PREPARE TO FIRE":

- |   |     |     |     |
|---|-----|-----|-----|
| . Checked recoil oil by feeling replenisher indicator tape for one rough and one smooth edge. | ___ | ___ | ___ |
| . Added or drained recoil oil (if required).  | ___ | ___ | ___ |
| . Moved breechblock crank stop to the rear.   | ___ | ___ | ___ |
| . Opened breech and looked in chamber for obstruction and cleanliness.                        | ___ | ___ | ___ |
| . Tightened coax machinegun mounting bolts.   | ___ | ___ | ___ |
| . Plugged electrical lead into solenoid.  | ___ | ___ | ___ |
| . Inspected turret stowed ammunition for completeness, type and serviceability.               | ___ | ___ | ___ |

On command "CHECK FIRING SWITCHES":

- |  |     |     |     |
|--|-----|-----|-----|
| . Placed main gun safety switch in FIRE POSITION.  | ___ | ___ | ___ |
| . Installed circuit tester between breechblock and face of chamber.  | ___ | ___ | ___ |
| . Observed for lighting of circuit tester bulb each time Gunner or TC announced "ON THE WAY," and announced "NO FIRE" any time bulb failed to light.   | ___ | ___ | ___ |
| . Closed the cover on the coax, charged it, and listened for forward action of barrel and barrel extension when Gunner and TC activated firing switches (recharging coax before each check). | ___ | ___ | ___ |
| . Removed and stowed circuit tester.   | ___ | ___ | ___ |

On Gunner's alert, "POWER":

Yes No NA

- . Checked for obstruction to turret traverse and unlocked turret.
- . Inspected hull stowed ammunition for completeness, type, and serviceability; coordinating turret traverse with Gunner in order to expose stowage area.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

On command "REPORT":

- . Reported "LOADER READY."

16. CHECK OPERATION OF THE M3 HEATER

On Driver's request, "CHECK GAS PARTICULATE UNIT":

- . Rotated Air Heater knob to ON and checked for indicator lamp operation.
- . Checked air flow through hose.
- . Allowed air to warm up for at least five minutes.
- . Checked air temperature.
- . Adjusted protective mask and attached air hose.
- . Removed and stowed air hose and protective mask.
- . Rotated air heater knob to OFF and listened for audible click.
- . Reported status of M3 Heater to the driver.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SCORING.

To pass, Loader must have:

- a. Correctly responded to engine and transmission dip stick readings.
- b. Detected that track tension was loose and adjusted it.
- c. Reported that main gun was not alined with boresight target and correctly assisted the Gunner to aline it.
- d. Checked M3 heater operation.
- e. Alined coax with boresight target.
- f. Stowed dummy rounds according to Ammunition Stowage Plan.
- g. Been checked "yes" or "NA" on all performance measures.
- h. If ammunition is not available for Loader to actually stow ammunition he will indicate, according to the Unit Ammunition Stowage Plan where various types of ammunition is stowed.  
(Task 10 and 11)

COMMENTS. (Recommended remedial training, etc.)

## LOADER'S READINESS TEST

### PART E. COMBAT LOADING (W)

**CONDITIONS.** The Loader is in a classroom and is administered TEC pre-tests 020-5346-F through 020-171-5348-F.

**INSTRUCTIONS TO LOADER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of three parts: 105MM Main Gun: Loading (TEC Lesson 020-171-5346-F), 105MM Main Gun: Misfire Procedures (TEC Lesson 020-171-5347-F), and 105MM Main Gun: Unloading (TEC Lesson 020-171-5348-F). Do not write in the test booklet, indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

Explain Loader's action upon hearing a main gun fire command.  
Explain procedure for loading a main gun round into the chamber.  
Explain safety precautions when operating the breech operating handle.  
Explain Loader's main gun misfire procedures after Gunner has tried all firing circuits.  
Explain Loader's misfire procedures for a cool gun and a hot gun after all firing actions have failed.  
Explain procedure to follow when unable to remove a misfired round from a hot gun.  
Indicate position of Loader's Safety switch before unloading a misfired round.  
Explain procedure for removing a round partially stuck in the chamber.  
Explain procedure for removing a projectile stuck in the tube.  
Explain how to close the breech manually.  
Explain procedure for testing the firing circuit.

#### NOTES.

- a. See Module L-5 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.

## LOADER'S READINESS TEST

### PART E: COMBAT LOADING

The Test Proctor will administer the following TEC Lesson pre-tests and the Loader will answer only those questions so indicated:

- . 105MM Main Gun: Loading (020-171-5346-F)
  - Loader will answer all questions.
- . 105MM Main Gun: Misfire Procedures (020-171-5347-F)
  - Loader will answer questions 4, 5, and 6.
- . 105MM Main Gun: Unloading (020-171-5348-F)
  - Loader will answer questions 1, 2, 3, 5, and 6.

LOADER'S READINESS TEST

PART E: COMBAT LOADING

Tec Lessons 020-171-5346-F,  
020-171-5347-F, and 020-171-  
5348-F.

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5346-F

1.a.

b.

c.

d.

e.

f.

g.

h.

2.

3.

020-171-5347-F

4.a.

b.

c.

d.

e.



f.

g.

5.a. (cool gun) (1)

(2)

(3)

b. (hot gun) (1)

(2)

(3)

6.a.

b.

c.

d.

020-171-5348-F

1.a.

b.

2.a.

b.

3.a.

b.

c.

d.

e.

5.

6.a.

b.

c.

d.

e.

f.

COMMENT. (recommended remedial training, etc.)

PASS FAIL

LOADER'S READINESS TEST

PART E: COMBAT LOADING

PRE-TEST ANSWER KEY

Tec Lessons 020-171-5346-F,  
020-171-5347-F, and 020-171-  
5348-F

ANSWER KEY

105MM MAIN GUN: LOADING  
(020-171-5346-F)

1. The correct actions and sequence for loading the main gun follow:
  - a. Make sure the loader's safety switch is in the SAFE position.
  - b. Open the breech if it is closed.
  - c. Inspect the chamber for obstructions.
  - d. Select the ammunition called for. (SABOT)
  - e. Place the round two-thirds of the way into the chamber and push it the rest of the way in with the heel of the fist.
  - f. Stand clear of the recoil path and make sure the recoil path is clear.
  - g. Place the loader's safety switch in the FIRE position.
  - h. Announce UP.
2. B. The loader has his fingers extended rather than having them formed into a fist.
3. The operating handle will fly up with enough force to cause serious injury if it strikes the loader.

105MM MAIN GUN: MISFIRE PROCEDURES  
(020-171-5347-F)

4. FOURTH MISFIRE.
  - a. Loader puts loader's safety switch on SAFE.
  - b. Loader waits two minutes.

- c. Loader opens breech.
  - d. Loader rotates round one-half turn.
  - e. Loader reloads the round.
  - f. Loader puts loader's safety switch on FIRE.
  - g. Loader announces UP.
5. FIFTH MISFIRE.
- a. Cool gun
    - (1) Loader makes sure loader's safety switch is on SAFE.
    - (2) Loader waits two minutes to allow for a possible hangfire.
    - (3) Loader removes round from breech.
  - b. Hot gun
    - (1) Loader makes sure loader's safety switch is on SAFE.
    - (2) Loader waits two minutes to allow for a possible hangfire.
    - (3) Loader removes round from the breech, within one additional minute.
6. The following steps are taken when the loader is unable to remove a misfired round from a hot gun within one additional minute after he has waited two minutes to allow for a possible hangfire.
- a. The loader closes the breech.
  - b. The loader makes sure the loader's safety switch is in the SAFE position.
  - c. The tank commander orders the crew to evacuate the tank for two hours.
  - d. At the end of two hours, the loader, assisted by other crewmen and safety personnel, removes the round.

105MM MAIN GUN: UNLOADING  
(020-171-5348-F)

- 1.a. Loader's safety switch. Wrong.
- b. Gunner's main gun switch. Wrong.

- 2.a. One crewman holds the breech operating handle down.
  - b. Another crewman pries the round out of the chamber with the ramming and extracting tool.
- 3.a. Fill the chamber with rags to cushion the base of the projectile.
  - b. Close the breech manually.
  - c. Push the rammer down the tube until the bell of the rammer is resting on the projectile, then apply steady pressure until the projectile is freed from the tube and pushed into the cushion of rags in the chamber. (Any shorter version of this answer is satisfactory as long as the rammer, steady pressure, and freed from the tube are included.)
  - d. Open the breech.
  - e. Remove the projectile.
5. Trip the extractors with a wooden block.
- 6.a. Make sure the main gun is not loaded.
  - b. Close the breech manually.
  - c. Insert the circuit tester between the breech block and the breech ring.
  - d. Turn the master battery, turret power, and main gun switches ON. Place the loader's safety in the FIRE position.
  - e. Press the firing triggers on the power control handle, the manual elevating handle, and the tank commander's override.
  - f. Observe the lamp on the circuit tester. If it lights, the circuit is OK.

SCORING KEY.

Award 5 points for each correct response (215 possible points)

PASSING SCORE = 195 points.

## LOADER'S READINESS TEST

### PART F. COMBAT LOADING (HO)

**CONDITIONS.** M60A1 tank complete with BII, situated on level ground. Replenisher tape mock-up positioned forward of the Loader. The tape can be set at any one of four positions: one rough edge and one smooth edge, two rough edges, two smooth edges, or two long notches. The ready rack contains eight dummy rounds; 3 APDS, 3 HEAT, and 2 HEP stowed according to the unit's ammunition stowage plan. Dummy links of 7.62 and .50 caliber ammunition are also available.

**INSTRUCTIONS TO LOADER.** "At the start of the test I will give you some different settings on the replenisher mock-up and you are to tell me what actions you would take for each setting--before, during, and after firing. I will set the tape and you will go to the mock-up, feel the tape, and immediately report what action is called for. Next you will perform the duties of the Loader under simulated combat conditions. We will carry APDS ammunition in the tube for battlesight engagements, so begin by loading an APDS round. Listen to fire commands and react accordingly. Since you will be working with dummy rounds you will have to unload the rounds between firing. But wait until I give the command to unload. During the fire commands sequence a main gun MISFIRE and a coax STOPPAGE will be announced by the Gunner (TC scorer). In addition you will get into the TC's position and load, clear, and apply immediate action to the M85. OK...Take up your position in the Loader's station and load a round of APDS."

#### TASKS.

- \*Determine corrective action required by replenisher tape readings.
- \*Load main gun in response to fire commands.
- \*Rotate round in main gun misfire procedure.
- \*Unload misfired main gun round.
- \*Load coax.
  - Ready coax in response to fire command.
- \*Clear and unload coax.
- \*Apply immediate action to reduce coax stoppage.
- \*Change coax barrel.
- ##\*Load M85.
- ##\*Clear and unload M85.
- ##\*Apply immediate action to reduce M85 stoppage.

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TANK CREWMAN (M60A1) READINESS TESTS.(U)

NOV 79 R E O'BRIEN, J H HARRIS, W C OSBORN

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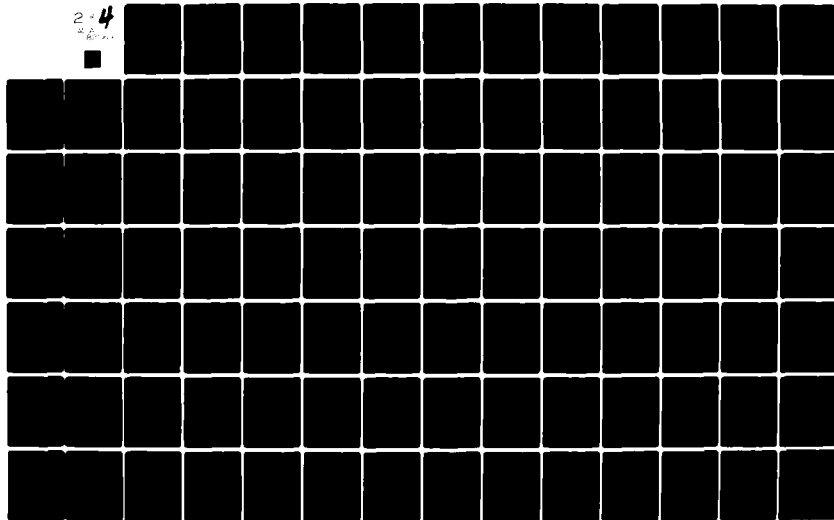
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NL

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NOTES.

- a. Loader should not be given this test until he has passed Loader Readiness Test, Parts A through E.
- b. TC should present each of the four replenisher tape settings in a series of eight settings in random order to the Loader.
- c. Remedial training for tasks failed should be provided on the spot but after the Loader has completed all of Part F. See Module L-6 for remedial training.
- d. It is necessary to perform the tasks and the steps within each task in the order given.
- e. For Performance Measures 2 and 5, TC-Scorer gives a series of fire commands, at about 15 second intervals, that requires loading the available type of dummy rounds interspersed with two or three coax commands. A suggested sequence is:
  - (1) Battlesight (SABOT) HEP, HEAT, COAX, HEP MISFIRE.
  - (2) (Reload for battlesight) SABOT, (No CEASE FIRE) SABOT, HEAT, COAX, STOPPAGE.
- f. The MISFIRE command provides a break in the sequence. After TC-scorer goes through MISFIRE checks, tells the Loader to rotate the round, and round still fails to fire; he then waits two minutes for a hang fire, tells Loader to unload the round, and assists him in doing so.
- g. Loading should be timed with a stop watch. Timing should begin with the announcement of the ammunition element and end with the Loader's announcement UP. Time should be cumulated for each series of fire commands.
- h. Cross training tasks are indicated by a # symbol.
- i. Estimated time, 1 1/4 hours.

# PERFORMANCE MEASURES.

	Yes	No	NA
1. DETERMINED CORRECTIVE ACTION REQUIRED BY REPLENISHER TAPE READINGS			
. Took no action if felt one rough edge and one smooth edge.	—	—	—
. Added oil to replenisher (after announcing CEASE FIRE if during firing) if felt rough edges on both sides of the tape.	—	—	—
. Continued to check tape frequently during firing if felt smooth edges on both sides of tape, but drained oil from replenisher at first opportunity.	—	—	—
. Drained oil from replenisher (after announcing CEASE FIRE, if during firing) if felt two long notches on tape.	—	—	—
. Took correct action upon feeling rough edges on both sides of replenisher tape.	—	—	—
. Took corrective action upon feeling smooth edges on both sides of replenisher tape.	—	—	—
. Took no action upon feeling one rough edge and one smooth edge on replenisher tape.	—	—	—
. Took corrective action upon feeling two long notches on replenisher tape.	—	—	—
2. LOADS MAIN GUN IN RESPONSE TO FIRE COMMANDS			
a. Battlesight, SABOT Loaded.			
. Stood clear of path of recoil.	—	—	—
. Placed firing safety switch in FIRE.	—	—	—
. Announced UP.	—	—	—
. Prepared to load a second round in case no CEASE FIRE was given.	—	—	—
b. Main Gun Not Loaded.			
. Placed firing safety switch in SAFE position.	—	—	—
. Checked replenisher tape.	—	—	—
. Opened breech.	—	—	—
. Selected announced ammunition.	—	—	—
. Unlocked ammunition ready rack.	—	—	—
. Inserted appropriate round into chamber by placing round 2/3rds into chamber and pushing it rest of the way with heel of fist, swinging arm up and away from closing breech.	—	—	—
. Stood clear of path of recoil.	—	—	—
. Placed firing safety switch in FIRE position.	—	—	—
. Announced UP.	—	—	—
. Prepared to load a second round in case no CEASE FIRE was given.	—	—	—

	<u>Yes</u>	<u>No</u>	<u>NA</u>
c. SABOT Loaded, Different Ammunition Element Given.			
. Placed firing safety switch in SAFE position.	___	___	___
. Checked replenisher tape.	___	___	___
. Unloaded SABOT round.	___	___	___
. Placed and locked SABOT round in ready rack.	___	___	___
. Selected announced ammunition.	___	___	___
. Unlocked ammunition ready rack.	___	___	___
. Inserted appropriate round into chamber by placing round 2/3rds into chamber, and pushing it rest of way with heel of fist, swinging arm up and away from closing breech.	___	___	___
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE position.	___	___	___
. Announced UP.	___	___	___
. Prepared to load a second round in case no CEASE FIRE is given.	___	___	___
3. ROTATED ROUND IN MAIN GUN MISFIRE PROCEDURE			
On Gunner's command ROTATE ROUND:			
. Placed firing safety switch in SAFE position.	___	___	___
. Opened breech slowly enough to extract round about 1/2 way.	___	___	___
. Rotated round 1/2 turn.	___	___	___
. Pushed round into chamber with heel of the fist, swinging arm up and away from closing breech.	___	___	___
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE position.	___	___	___
. Announced UP.	___	___	___
4. UNLOAD MISFIRED MAIN GUN ROUND			
. Told Gunner to turn main gun and turret power switches OFF.	___	___	___
. Placed firing safety switch in SAFE position.	___	___	___
. Opened breech.	___	___	___
. Held breech operating handle down while TC (Gunner) pried round out of chamber.	___	___	___
. Returned breech operating handle to latched position.	___	___	___
5. LOAD COAX			
. Pushed forward on rear of left cover latch rod assembly and raised cover.	___	___	___
. Raised feed tray.	___	___	___
. Placed machinegun safety in FIRE position.	___	___	___
. Charged (cocked) machinegun by pulling charger handle to rear.	___	___	___
. Inspected chamber for obstructions by looking and feeling in chamber.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Placed safety in SAFE position.	—	—	—
. Lowered feed tray.	—	—	—
. Fed ammunition belt through chute of ammunition box.	—	—	—
. Placed first round of ammunition belt in feed tray slot with open side of ammunition link loops facing down.	—	—	—
. Closed machinegun cover assuring that lock rod is engaged.	—	—	—
<b>6. READY COAX IN RESPONSE TO FIRE COMMANDS</b>			
. Placed coax safety in FIRE position.	—	—	—
. Announced UP.	—	—	—
<b>7. CLEAR AND UNLOAD COAX</b>			
. Placed safety in the SAFE (S) position.	—	—	—
. Pushed forward on rear of left rod assembly and opened cover assembly.	—	—	—
. Removed ammunition belt from machinegun.	—	—	—
. Lifted feed tray group, look and feel that receiver and chamber are clear of ammunition.	—	—	—
. Placed safety to FIRE (F) position.	—	—	—
. Pulled charger handle rearward, depress manual firing trigger and allowed barrel extension to close slowly.	—	—	—
. Placed safety in SAFE (S) position.	—	—	—
. Closed cover assembly.	—	—	—
<b>8. APPLY IMMEDIATE ACTION TO REDUCE COAX STOPPAGE</b>			
On Command STOPPAGE:			
. Waited 5 seconds to allow for a hangfire.	—	—	—
. Charged machinegun, locking recoiling parts to rear.	—	—	—
. Checked to see if ammunition is feeding into weapon.	—	—	—
. Pulled barrel extension to rear.	—	—	—
. Placed safety in SAFE.	—	—	—
. Raised cover and removed ammunition.	—	—	—
. Removed "misfired" round from chamber.	—	—	—
. Placed safety in FIRE (F) and hand functioned weapon one cycle.	—	—	—
. Reloaded weapon.	—	—	—
. Announced UP.	—	—	—
<b>9. CHANGE COAX BARREL</b>			
. Opened cover assembly and removed belted ammunition.	—	—	—
. Charged weapon to sear position and placed safety in SAFE.	—	—	—

Yes No NA

- . Removed live ammunition or spent cartridge from weapon chamber and links from immediate area. \_\_\_
- . Ensured weapon is clear by looking into and feeling receiver and chamber. \_\_\_
- . Pulled disconnecter ring to rear to allow receiver assembly to rotate downward. \_\_\_
- . Removed barrel assembly from jacket assembly. \_\_\_
- . Installed new barrel assembly in jacket assembly. \_\_\_
- . Rotated receiver assembly upward and allowed disconnecter to engage into jacket assembly mounting block. \_\_\_
- . Placed safety in FIRE and hand functioned weapon one cycle. \_\_\_
- . Loaded weapon and attempted to fire. \_\_\_

(WARNING: Use asbestos gloves when removing a hot barrel.)

#### 10. LOAD M85

- . Unlatched and raised cover. \_\_\_
- . Visually checked and felt in chamber for round. \_\_\_

(NOTE: If bolt is in forward position place safety in FIRE (F) position and pull charger handle rearward until bolt assembly is in rear position. Check and feel in chamber for round.)

- . With safety in FIRE (F) position pulled charger handle fully rearward and while keeping tension on handle pulled trigger extension handle depressing trigger to allow bolt assembly to close slowly. \_\_\_
- . Placed .50 caliber ammunition in ammunition box and fed belt until three or four rounds were in flexible chute. \_\_\_
- . Pulled rounds into feed tray assembly. \_\_\_
- . Placed leading round of belt on tray with gun side of links down so it is held by belt retaining pawls. \_\_\_
- . Closed cover assembly. \_\_\_
- . Charged machinegun. \_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
11. CLEAR AND UNLOAD M85			
. Placed cupola firing safety switch in OFF position.	—	—	—
. Held cupola electrical power control switch in OFF position momentarily.	—	—	—
. Assured safety is in SAFE (S) position.	—	—	—
. Unlatched and opened cover assembly.	—	—	—
. If bolt assembly is in forward position placed safety in FIRE (F) position and pulled charger handle until bolt assembly was fully rearward.	—	—	—
. Keeping tension on charger handle pulled trigger extension handle to depress trigger and allowing bolt assembly to close slowly.	—	—	—
. Placed safety in SAFE (S) position.	—	—	—
12. APPLY IMMEDIATE ACTION TO REDUCE STOPPAGE OF M85			
. Waits 5 seconds to allow for hangfire.	—	—	—
. Charged the machinegun locking recoiling parts to rear.	—	—	—
. Checked to see if ammunition is feeding into machinegun.	—	—	—
. Attempted to fire weapon.	—	—	—
. Charged the machinegun to sear position.	—	—	—
. Rotated safety to SAFE (S).	—	—	—
. Raised cover and removed ammunition.	—	—	—
. Removed "misfired" round from chamber.	—	—	—
. Rotated safety to FIRE (F) and hand functioned the weapon one cycle.	—	—	—
. Reloaded the weapon.	—	—	—
. Attempted to fire weapon.	—	—	—

#### SCORING.

To pass, the Loader must have:

- Stated the correct action for each of the eight test trials for during-firing and before-firing conditions.
- Responded in each trial without hesitation, immediately after feeling the tape.
- Executed the first five fire commands in a total time of 35 seconds, and the second four commands (five loading reactions) in 1 minute 35 seconds.
- Responded to MISFIRE, including unloading the misfired round, within 2 1/2 minutes.
- Responded to STOPPAGE by removing misfired round within 10 seconds of command, and completed procedure within 15 seconds.

- f. Selected the correct round in response to each fire command.
- g. Checked replenisher tape at least once during the test.
- h. Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS

FAIL

## LOADER'S READINESS TEST

### PART G. TARGET ACQUISITION (W)

**CONDITIONS.** The Loader is in a classroom and is administered TEC pre-tests 020-171-1611-F, 020-171-1612-F, 020-171-1614-F, and 935-171-0203-F.

**INSTRUCTIONS TO LOADER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of four parts: Target Range Estimation (TEC Lesson 020-171-1611-F), Locating and Reporting Targets (TEC Lesson 020-171-1612-F), Target Acquisition Scanning Techniques (TEC Lesson 020-171-1614-F), and Armor Vehicle Recognition (TEC Lesson 935-171-0203-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

- Explain the range estimation method in which you estimate the range half the distance to the target.
- Explain the range estimation method in which a target at a known range appears half as big as a like target at an unknown range.
- Explain the range estimation method in which a target at a known range appears twice as big as a like target at an unknown range.
- Explain location of targets by the clock system.
- Explain reporting of targets by the clock system.
- Explain the technique of quick search scanning of an area.
- Explain ways to adapt your eyes to the darkness.
- Explain how to preserve night vision.
- Explain how to scan an area at night.
- Identify U.S. and Foreign Armor Vehicles.

#### NOTES.

- a. See Module L-7 for remedial training of deficiencies.
- b. Estimated time, 1 hour.



## **LOADER'S READINESS TEST**

### **PART G: TARGET ACQUISITION**

The Test Proctor will administer the following TEC Lesson pre-tests and the Loader will answer only those questions so indicated:

- . Target Range Estimation (020-171-1611-F).
  - Loader will answer questions 2, 4, and 5.
- . Locating and Reporting Targets (020-171-1612-F).
  - Loader will answer question 1.
- . Target Acquisition Scanning Techniques (020-171-1614-F).
  - Loader will answer questions 1, 3, 4, and 6.
- . Armor Vehicle Recognition (935-171-0203-F).
  - Loader will identify all vehicles shown on TEC tape, vehicle 1 through vehicle 17.

LOADER'S READINESS TEST

PART G: TARGET ACQUISITION

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1611-F

2. Step a.

Step b.

Step c.

4.

5.

020-171-1612-F

1.a. Target

b. Posture

c. Direction

d. Range

020-171-1614-F

1.

3.

4.

6.a.

b.

935-171-0203-F

<u>VEHICLE</u>	<u>COUNTRY</u>	<u>VEHICLE</u>	<u>COUNTRY</u>
1.		10.	
2.		11.	
3.		12.	
4.		13.	
5.		14.	
6.		15.	
7.		16.	
8.		17.	
9.			

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

LOADER'S READINESS TEST

PART G: TARGET ACQUISITION

PRE-TEST ANSWER KEY

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F

ANSWER KEY

TARGET RANGE ESTIMATION  
(020-171-1611-F)

2. The Loader's diagram or description must include three steps:
  - Step a. Divide the distance to the target in half.
  - Step b. Estimate the distance to the halfway point in 100 meter increments.
  - Step c. Double the range for estimated range to target.
4. 1000 meters.
5. 600 meters.

LOCATING AND REPORTING TARGETS  
(020-171-1612-F)

- 1.a. Target TANK
- b. Posture MOVING LEFT
- c. Direction ONE O'CLOCK (12:00 or 2:00 is acceptable).
- d. Range ONE FIVE HUNDRED

TARGET ACQUISITION SCANNING TECHNIQUES  
(020-171-1614-F)

1. A, C
3. B, C

4. A

6.a. Short, jerky movements.

b. Pause a few seconds at each point.

ARMOR VEHICLE RECOGNITION  
(935-171-0203-F)

<u>VEHICLE</u>	<u>COUNTRY</u>	<u>VEHICLE</u>	<u>COUNTRY</u>
1. AMX-30	French	10. AMX-13	French
2. M60	U.S.	11. M60A1	U.S.
3. CHIEFTON	British	12. JAG-PANZER	German
4. ASU-57	Soviet	13. PT-76	Soviet
5. M551	U.S.	14. T-34	Soviet
6. T-10	Soviet	15. LEOPARD	German
7. CENTURIAN	British	16. ASU-85	Soviet
8. M60A2	U.S.	17. T-62	Soviet
9. T-55	Soviet		

SCORING KEY.

Award 5 points for each correct response (165 points possible).

PASSING SCORE = 150 points.

## LOADER'S READINESS TEST

### PART H. LOCATING AND REPORTING TARGETS (HO)

**CONDITIONS.** Fully operational M60A1 tank located at an observation point on a target acquisition course. The course includes silhouette, tank and truck targets located at ranges from 400 meters to 1500 meters. The loader will observe from the open hatch position. (The tank will be positioned so the Loader's target area of responsibility (9:30 o'clock counterclockwise to 5:30 o'clock) overlaps the right and left boundaries of the target acquisition course.)

**INSTRUCTIONS TO LOADER.** "This is a test of your target acquisition ability. You will be required to scan the area, estimate range to various targets, and report target locations. React to my instructions."

#### TASKS.

- Conduct a quick search scan of the area.
- \*Locate and identify targets in the area.
- Estimate range to targets in the area.
- Report location of targets in the area.

#### NOTES.

- a. Loader should not be given this test until he has passed Loader's Readiness Test, Part G.
- b. Tasks should be performed in order given.
- c. See example layout of target acquisition course.
- d. See Module L-8 for remedial training of deficiencies.
- e. Estimated time, 3/4 hour.

#### PERFORMANCE MEASURES.

Yes No NA

##### 1. CONDUCT A QUICK SEARCH SCAN OF THE AREA

Given the special command SCAN YOUR TARGET AREA OF RESPONSIBILITY:

- . Scanned area directly in front, going close in to far out.
- . Scanned area to left (or right) of initial area, overlapping initial area, going from close in to far out.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Yes No NA

- . Scanned area to right (or left) of initial area, overlapping initial area, going from close in to far out.

— — —

## 2. LOCATE AND IDENTIFY TARGETS IN THE AREA

Given the special command LOCATE AND IDENTIFY TARGETS IN THE AREA the Loader will have five minutes to locate and identify all targets.

- . Located and identified target 1 (TROOPS).
- . Located and identified target 2 (TANK).
- . Located and identified target 3 (TANK).
- . Located and identified target 4 (TRUCK).
- . Located and identified target 5 (TROOPS).
- . Located and identified target 6 (TRUCK).
- . Located and identified target 7 (TANK).
- . Located and identified target 8 (TROOPS).

— — —  
— — —  
— — —  
— — —  
— — —  
— — —  
— — —  
— — —

## 3. ESTIMATE RANGE TO TARGETS IN THE AREA

Given the range of 1000 meters to target 2 and the special command DETERMINE RANGE TO ALL TARGETS IN THE AREA the Loader will determine the range to all targets to within ± 100 meters.

- . Determine range to target 1 as 400 meters.
- . Determined range to target 3 as 500 meters.
- . Determined range to target 4 as 1200 meters.
- . Determined range to target 5 as 1000 meters.
- . Determined range to target 6 as 1200 meters.
- . Determined range to target 7 as 1500 meters.
- . Determined range to target 8 as 900 meters.

— — —  
— — —  
— — —  
— — —  
— — —  
— — —  
— — —

## 4. REPORT LOCATION OF TARGETS IN THE AREA

Given a designated target and the special command REPORT LOCATION OF TARGET NO. \_\_\_\_, the Loader will report the type, posture (moving or stationary), location (by clock system, within one hour deviation), and range to the target (within ± 100 meters).

- . Target 1. TROOPS, STATIONARY, FIVE O'CLOCK, FOUR HUNDRED.
- . Target 3. TANK, STATIONARY, NINE O'CLOCK, FIVE HUNDRED.
- . Target 4. TRUCK MOVING LEFT TO RIGHT, SIX O'CLOCK, TWELVE HUNDRED.

— — —  
— — —  
— — —

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Target 5. TROOPS, STATIONARY, NINE O'CLOCK, ONE THOUSAND.	_____	_____	_____
. Target 6. TRUCK, STATIONARY, EIGHT O'CLOCK, ONE TWO HUNDRED.	_____	_____	_____
. Target 7. TANK, STATIONARY, SEVEN O'CLOCK, ONE FIVE HUNDRED.	_____	_____	_____
. Target 8. TROOPS, STATIONARY, NINE O'CLOCK, NINE HUNDRED.	_____	_____	_____

#### SCORING.

To pass, Loader must have:

- a. Located and identified all targets in area within five minutes.
- b. Estimated range to all targets within  $\pm$  100 meters.
- c. Given location of all targets within one hour deviation.
- d. Been checked "Yes" or "NA" on each performance measure.

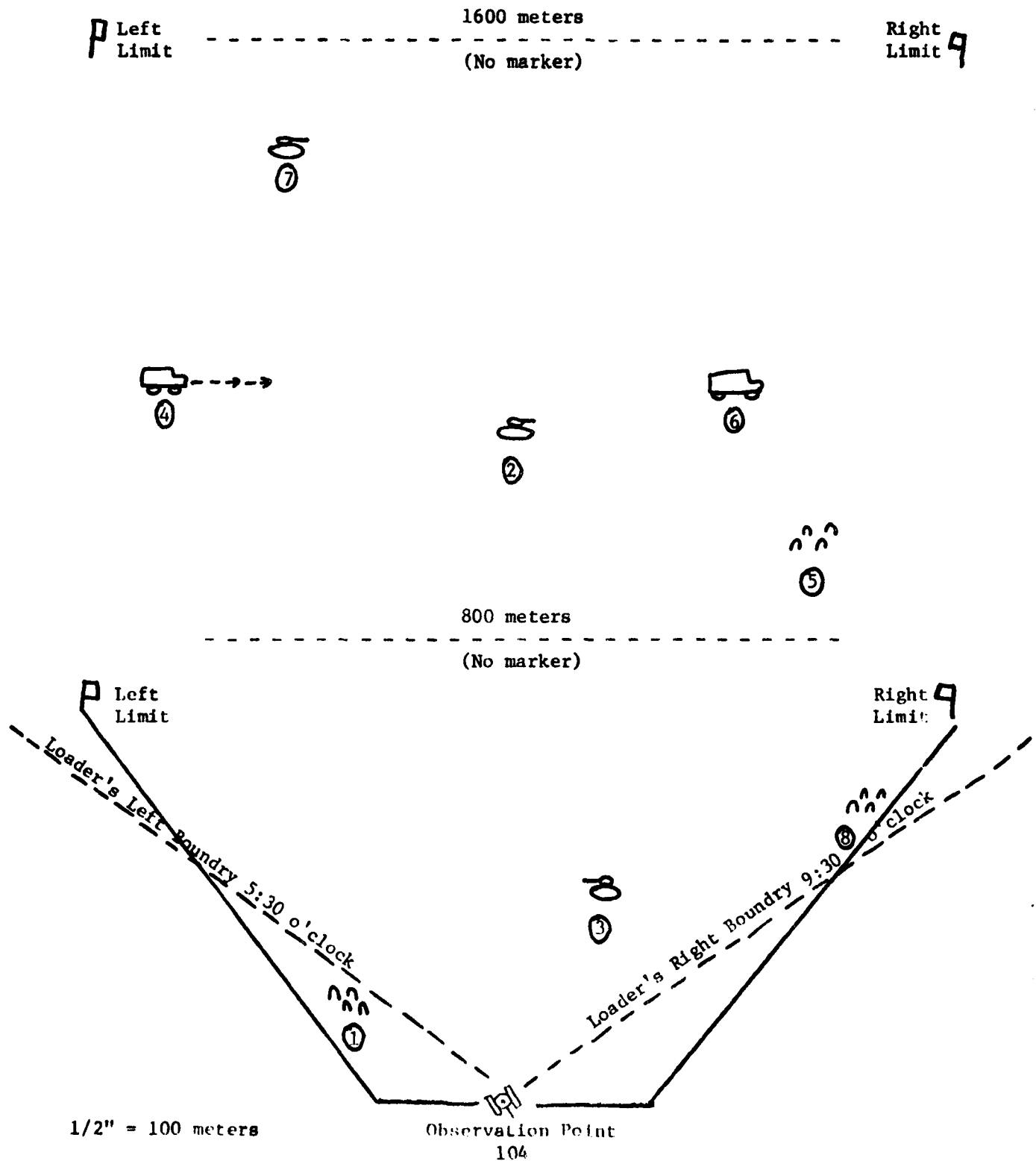
COMMENTS. (Recommended remedial training, etc.)

PASS FAIL



# TARGET ACQUISITION COURSE

Example. (Loader's target area of responsibility is from 5:30 o'clock to 9:30 o'clock.)



APPENDIX C

GUNNER'S READINESS TEST

## GUNNER'S READINESS TEST

REQUIRED TIME. 11 hours

CROSS TRAINING. Tank Crew Gunnery Skills Test (TCGST) tasks, FM 17-12-2 are indicated by an \*. Cross training tasks are indicated by a # symbol.

### PART A. WEAPONS MAINTENANCE (W)

Type: Written pre-tests for TEC Lessons:

020-171-1132-F (Cleaning, Inspection, and Lubrication Coax)

020-171-1133-F (Troubleshooting Coax)

020-171-5229-F (Troubleshooting M85 Machinegun)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

### PART B. WEAPONS MAINTENANCE (HO)

Type: Hands-On

Time: 1 hour

Location: Company Area or UTS

Support: Tank with dummy rounds and TC Scorer

Scoring: 100% correct

### PART C. BEFORE OPERATIONS PROCEDURES (HO)

Type: Hands-On

Time: 3/4 hour

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART D. WEAPON SYSTEMS PREPARATION (W)

Type: Written pre-tests for TEC Lessons:

- 020-171-5351-F (Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1 [Exclusive of RF] Part I)
- 020-171-5355-F (Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1 [Exclusive of RF] Part II)
- 020-171-5342-F (Preparing Periscope/Telescope for Operation)
- 020-171-5337-F (Auxiliary Fire Control Instruments, Part II [Exclusive of Azimuth Indicator])
- 020-171-5354-F (Boresighting the Xenon Searchlight, M60/M60A1 Tank)
- 020-171-5353-F (Zeroing the Main Gun and Machineguns and Setting Battlesight)
- 020-171-5341-F (Preparing the Ballistic Computer for Operation)
- 020-171-5352-F (Boresighting the Machineguns [Exclusive of M85 Machinegun])

Time: 1 1/4 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART E. WEAPON SYSTEMS PREPARATION (HO)

Type: Hands-On

Time: 1 1/4 hour

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART F. COMBAT LOADING (W)

Type: Written pre-tests for TEC Lessons:

- 020-171-5331-F (Tank Ammo: Selecting Ammunition)
- 020-171-5332-F (Tank Ammo: Handling, Main Gun)
- 020-171-5346-F (105MM Gun: Loading)
- 020-171-5347-F (105MM Gun: Misfire Procedures)
- 020-171-5348-F (105MM Gun: Unloading)

Time: 3/4 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART G. COMBAT LOADING (HO)

Type: Hands-On

Time: 1 1/4 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 100% correct

PART H. TARGET ACQUISITION (W)

Type: Written pre-tests for TEC Lessons:

020-171-1611-F (Target Range Determination)

020-171-1612-F (Locating and Reporting Targets)

020-171-1614-F (Target Acquisition Scanning Techniques)

935-171-0203-F (Armor Vehicle Recognition)

Time: 1 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART I. LOCATING AND REPORTING TARGETS (HO)

Type: Hands-On

Time: 3/4 hour

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART J. TACTICAL OPERATIONS (W)

Type: Written pre-tests for TEC Lesson:

020-171-5364-F (Machinegun Engagements)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART K. TACTICAL OPERATIONS (HO)

Type: Hands-On

Time: 2 hours

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

## GUNNER'S READINESS TEST

### PART A. WEAPONS MAINTENANCE (W)

**CONDITIONS.** Gunner is in a classroom and is administered TEC pre-tests 020-171-1132-F, 020-171-1133-F, and 020-171-5229-F.

**INSTRUCTIONS TO GUNNER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number and today's date on the answer sheet. The test consists of three parts: Cleaning, Inspection, and Lubrication of Coax (TEC Lesson 020-171-1132-F), Troubleshooting Coax (TEC Lesson 020-171-1133-F), and Troubleshooting M85 Machinegun (TEC Lesson 020-171-5229-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

### TASKS.

- Explain correct method of cleaning coax backplate assembly.
- Identify various compounds for cleaning coax barrel.
- Identify coax unserviceable parts.
- Identify various lubricants to use on coax.
- Identify coax parts that should be free of lubricants.
- Identify coax parts that are lubricated just prior to firing.
- Explain "Gunner's" action (in Loader's position) upon hearing STOPPAGE announced first time and second time with a hot and a cold coax.
- Explain "Gunner's" action (in Loader's position) upon hearing STOPPAGE announced second time, with a hot coax, and coax cannot be cleared quickly.
- Explain "Gunner's" action (in Loader's position) if coax has a ruptured cartridge and the stoppage must be corrected quickly.
- Explain "Gunner's" action (in TC's position) upon initial stoppage of M85.
- Explain "Gunner's" action (in TC's position) when hot M85 fails to fire and immediate action has failed and a round remains in the chamber.
- Explain "Gunner's" action (in TC's position) when a cold M85 fails to fire after two attempts.
- Explain "Gunner's" action (in TC's position) if M85 has a ruptured cartridge and there is no spare barrel.
- Explain "Gunner's" action (in TC's position) after M85 extractor has been driven through the ruptured cartridge.

NOTES.

- a. See Module G-1 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.



## GUNNER'S READINESS TEST

### PART A: WEAPONS MAINTENANCE

The Test Proctor will administer the following TEC Lesson pre-tests and the Gunner will answer only those questions so indicated:

- . Cleaning, Inspection, and Lubrication Coax (020-171-1132-F)
  - Gunner will answer all questions.
- . Troubleshooting Coax (020-171-1133-F)
  - Gunner will answer all questions.
- . Troubleshooting M85 Machinegun (020-171-5229-F)
  - Gunner will answer all questions.

GUNNER'S READINESS TEST

PART A: WEAPONS MAINTENANCE

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and  
020-171-5229-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1132-F

1.

2.a.

b.

c.

3.a.

b.

c.

4.

5.

6.

7.

8.

020-171-1133-F

1.

2.

3.

4.

5.

020-171-5229-F

1.

2.

3.

4.

5.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

GUNNER'S READINESS TEST

PART A: WEAPONS MAINTENANCE

PRETEST ANSWER KEY

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and  
020-171-5229-F

ANSWER KEY

M73/M219 MACHINEGUN: CLEANING, INSPECTION AND LUBRICATION  
(020-171-1132-F)

1. Wipe it off with a clean, dry cloth.
- 2.a. Solvent (SD)
  - b. RBC
  - c. RBC
- 3.a. (Barrel cracked)
  - b. (Camway burned)
  - c. (Guide rod is bent)
- 4.c. (LSA)
- 5.e. (LAW)
- 6.b. (PL Special)
- 7.a. (The barrel)
8. Both

TROUBLESHOOTING THE COAX  
(020-171-1133-F)

1. A
2. B
3. A
4. C
5. Change the barrel

TROUBLESHOOTING THE M85 MACHINEGUN  
(020-171-5229-F)

1. Wait five seconds, charge gun, attempt to fire (or equivalent answer).
2. Wait five minutes (or equivalent answer).
3. Wait five seconds, clear gun, hand function, reload and attempt to fire (or equivalent answer).
- 4.c. Insert extractor into bolt, fire manually.
- 5.b. Pull the charger handle back so that the extractor and cartridge are just clear of the chamber.

SCORING KEY.

Award 5 points for each correct response (110 points possible).

PASSING SCORE = 100 points.

## GUNNER'S READINESS TEST

### PART B. WEAPONS MAINTENANCE (HO)

CONDITIONS. An M60A1 tank with coax and .50 caliber machineguns mounted, and a complete gun-tool roll stowed according to unit loading plan.

INSTRUCTIONS TO GUNNER. "This test is in three parts. In the first part you are to remove the coax from the tank, disassemble and assemble it, and remount the coax in the tank. In the second part you will do the same for the M85. In the third part you will remove, disassemble, assemble, and install the breechblock. You will have 3 minutes for disassembling and 3 minutes for assembly of each machinegun, and 6 minutes for removal and disassembly of the breechblock, and 6 minutes for assembly and installation of the breechblock. I will alert you before I start timing on each of these tasks. I will not assist you during the test . . . Do you have any questions? Work quickly, but carefully . . . . Ready? . . . . Begin . . . ."

#### TASKS.

Remove the coax from a tank.  
#\*Disassemble the coax.  
Inspect the coax.  
#\*Assemble the coax.  
Check operation of the coax.  
Mount the coax in a tank.  
Remove the M85 from a tank.  
#\*Disassemble the M85.  
Inspect the M85.  
#\*Assemble the M85.  
Check operation of the M85.  
Mount the M85 in a tank.  
#\*Disassemble the main gun breechblock.  
#\*Assemble the main gun breechblock.

#### NOTES.

- a. Gunner should not be given this task until he has passed Gunner's Readiness Test, Part A.
- b. Remedial training of tasks failed should be provided on the spot, but after the Gunner has completed all of Part B. See Module G-2 for remedial training.
- c. All performance measures and steps within each task must be performed in the order given.

d. Cross training tasks are indicated by a # symbol.

e. Estimated time, 1 hour.

#### PERFORMANCE MEASURES.

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. REMOVE THE COAX FROM A TANK			
. Disconnected electrical lead from solenoid.	___	___	___
. Loosened three support set screws in collar on gun mount cover shield.	___	___	___
. Removed machinegun retainer.	___	___	___
. Removed machinegun.	___	___	___
. Removed spent cartridge bag.	___	___	___
. Removed case ejection shield.	___	___	___
2. DISASSEMBLE THE COAX ( <u>3 minutes</u> )			
. Removed barrel and jacket assembly from receiver.	___	___	___
. Separated barrel from jacket assembly.	___	___	___
. Removed cover assembly.	___	___	___
. Removed feed tray.	___	___	___
. Removed guide rod springs while holding barrel extension forward.	___	___	___
. Separated guide rods from guide rod springs.	___	___	___
. Removed backplate assembly.	___	___	___
. Retracted barrel assembly.	___	___	___
. Depressed buffer support lever and removed barrel extension.	___	___	___
. Removed breechblock from barrel extension assembly.	___	___	___
. Removed retainer clip and charger assembly from projecting stud.	___	___	___
3. INSPECT THE COAX			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust and foreign matter.	___	___	___
. Checked all moving parts for looseness, binding, wear, or damage.	___	___	___
4. ASSEMBLE THE COAX			
. Installed charger assembly.	___	___	___
. Placed breechblock assembly in barrel extension.	___	___	___
. Installed barrel extension.	___	___	___
. Installed backplate assembly.	___	___	___
. Joined guide rods and guided rod springs.	___	___	___
. Installed feed tray.	___	___	___
. Installed cover assembly.	___	___	___
. Joined barrel to jacket assembly.	___	___	___
. Joined barrel and jacket assembly with receiver.	___	___	___

	Yes	No	NA
5. CHECK OPERATION OF THE COAX			
. Placed safety in FIRE position.	_____	_____	_____
. Charged weapon to lock moving parts to rear.	_____	_____	_____
. Allowed barrel extension to ease forward by keeping tension on charging handle and depressing manual firing trigger.	_____	_____	_____
6. MOUNT THE COAX IN A TANK			
. Physically examined gun mount cover shield to see that three support set screws were backed off flush with collar of gun port.	_____	_____	_____
. If set screws were not flush with collar of gun port, unscrewed set screws so that flash suppressor of machinegun did not hit set screws when inserted through machinegun port.	_____	_____	_____
. Had the Gunner, if necessary, depress the gun tube so that it was horizontal or slightly below.	_____	_____	_____
. Placed the shell ejection shield on the shield support and fastened six snap fasteners which hold it in place.	_____	_____	_____
. Installed spent cartridge bag on empty cartridge bag support by fastening eight snap fasteners which hold it in place.	_____	_____	_____
. Slid machinegun into machinegun port until rearmost portion of jacket assembly (disconnecter holes) were flush with machinegun bracket assembly.	_____	_____	_____
. Placed machinegun retainer over rearmost position of jacket assembly, alining it with machinegun bracket assembly.	_____	_____	_____
. Inserted two cap screws and lock washers in their respective holes and tightened them down.	_____	_____	_____
. Plugged in machinegun electrical lead to solenoid on machinegun's backplate assembly.	_____	_____	_____
7. REMOVE THE M85 FROM A TANK			
. Cleared the weapon and left safety in SAFE (S).	_____	_____	_____
. Removed the M36 periscope.	_____	_____	_____
. Disconnected the solenoid lead connector from the backplate assembly.	_____	_____	_____
. Opened cradle access doors and removed barrel.	_____	_____	_____
. Manually elevated cradle 20°.	_____	_____	_____
. Removed rear mounting pin and slid machinegun out of cradle.	_____	_____	_____
. Passed machinegun out of turret through cupola hatch.	_____	_____	_____
. Replaced rear mounting pin in cradle.	_____	_____	_____
. Replaced M36 periscope.	_____	_____	_____

	Yes	No	NA
8. DISASSEMBLE M85 (3 minutes)			
. Cleared weapon.	___	___	___
. Removed barrel.	___	___	___
. Removed backplate group.	___	___	___
. Disengaged retainer lug of guide rod.	___	___	___
. Removed bolt buffer group.	___	___	___
. Separated helical spring, buffer sleeve and spring and guide rod.	___	___	___
. Removed feed and ejector assembly.	___	___	___
. Removed sear assembly.	___	___	___
. Removed barrel extension and bolt assembly.	___	___	___
. Separated bolt assembly from barrel extension.	___	___	___
. Removed hand charger assembly.	___	___	___
. Removed accelerator quick release pin.	___	___	___
. Removed cover assembly and feed tray assembly.	___	___	___
. Separated cover assembly from feed tray assembly.	___	___	___
. Removed accelerator assembly.	___	___	___
9. INSPECT THE M85			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust and foreign matter.	___	___	___
. Checked all moving parts for looseness, binding, wear or damage.	___	___	___
10. ASSEMBLE M85 (3 minutes)			
. Installed accelerator assembly.	___	___	___
. Replaced cover assembly on feed tray assembly.	___	___	___
. Installed cover assembly and feed tray assembly.	___	___	___
. Installed accelerator quick release pin.	___	___	___
. Installed hand charger assembly.	___	___	___
. Assembled bolt assembly and barrel extension.	___	___	___
. Replaced sear assembly.	___	___	___
. Replaced feed and ejector assembly.	___	___	___
. Assembled helical spring, buffer sleeve and spring, and guide rod.	___	___	___
. Installed bolt buffer group.	___	___	___
. Engaged retainer lug or guide rod.	___	___	___
. Replaced the backplate group.	___	___	___
. Installed the barrel.	___	___	___
11. CHECK OPERATION OF THE M85.			
. Placed safety in FIRE (F).	___	___	___
. Charged weapon to lock moving parts to the rear.	___	___	___
. Kept tension on charger handle and pulled trigger extension handle, depressing trigger to allow bolt assembly to close slowly.	___	___	___



12. MOUNT THE M85 IN A TANK

Yes No NA

- . Removed machinegun barrel from the receiver. \_\_\_\_\_
- . Removed M36 periscope body. \_\_\_\_\_
- . Removed machinegun rear mounting pin. \_\_\_\_\_
- . Manually elevated cradle 20°. \_\_\_\_\_
- . Lowered machinegun receiver into turret through cupola hatch. \_\_\_\_\_
- . Positioned machinegun into cradle and secured rear mounting pin. \_\_\_\_\_
- . Opened cradle access doors and installed barrel. \_\_\_\_\_
- . Connected solenoid lead to backplate assembly. \_\_\_\_\_
- . Manually depressed cradle to horizontal position. \_\_\_\_\_
- . Replaced M36 periscope body in mount. \_\_\_\_\_

13. DISASSEMBLE THE MAIN GUN BREECHBLOCK (6 minutes)

a. Removal

- . Insured that main gun safety switch was in SAFE position. \_\_\_\_\_
- . Insured that breechblock crank stop was in REAR position. \_\_\_\_\_
- . Opened breech. \_\_\_\_\_
- . Insured chamber was empty. \_\_\_\_\_
- . Closed breech manually by tripping extractors with an empty cartridge case or a wooden block. \_\_\_\_\_
- . Removed firing pin spring by depressing plunger, moving plunger to right, twisting firing pin spring retainer counterclockwise until lug aligned with the groove in breechblock, and removing retainer and spring. \_\_\_\_\_
- . Removed firing pin and retractor guide with firing pin retractor by inserting screwdriver blade into retractor guide slot and prying outward. \_\_\_\_\_
- . Screwed eye bolt into top of breechblock. \_\_\_\_\_
- . Suspended chain hoist from hook on turret ceiling and connected chain hoist to eye bolt. \_\_\_\_\_
- . Took up slack with chain hoist to support breechblock. \_\_\_\_\_
- . Applied tension on closing spring by turning adjuster clockwise with spanner wrench. \_\_\_\_\_
- . Removed tension from closing spring by depressing plunger from its notch with a screwdriver and allowing adjuster to turn counterclockwise under control of spanner wrench. \_\_\_\_\_
- . Inserted small screwdriver into hole in breechblock crank stop and slid stop forward. \_\_\_\_\_
- . Started breechblock downward by rotating operating handle rearward and down, and with chain hoist let breechblock begin descending. \_\_\_\_\_
- . Returned operating handle to latched position. \_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Lowered breechblock until breechblock crank pivot was free of the T-slot, and removed pivot.	—	—	—
. Lowered breechblock until breechblock was on the turret floor.	—	—	—
. Released chain hoist from eye bolt.	—	—	—
. Removed right and left extractors from breech ring.	—	—	—
<b>b. Disassembly</b>			
. Depressed firing contact plate plunger and turned firing contact plate counterclockwise until arrows on plate and breechblock were alined with each other.	—	—	—
. Removed firing contact plate, firing contact plate plunger, and spring.	—	—	—
. Removed plastic washer, firing contact, and firing contact sleeve.	—	—	—
. Removed retractor pivot pin and firing pin retractor from retractor guide.	—	—	—
. Removed screw, washers, and clamp securing retractor driver to bottom of breechblock. (Used Allen wrench	—	—	—
. Removed retractor driver, retractor driver shaft, and spring.	—	—	—
<b>14. ASSEMBLE MAIN GUN BREECHBLOCK (6 minutes)</b>			
<b>a. Assembly</b>			
. Installed retractor driver spring, shaft, and retractor driver into bottom of breechblock.	—	—	—
. Affixed retractor group to bottom of breechblock by installing securing clamp, washers, and screw with Allen wrench.	—	—	—
. Inserted firing contact sleeve, firing contact, plastic washer, spring, and firing contact plate plunger into breechblock.	—	—	—
. Installed firing pin retractor into retractor guide and secured it with retractor pivot pin.	—	—	—
. Replaced firing contact plate by alining arrow and depressing and rotating plate clockwise until firing contact plate plunger engaged locking notch in plate.	—	—	—
<b>b. Installation</b>			
. Installed right and left extractors into extractor pivots in the breech ring.	—	—	—
. Inserted chain hoist into eye bolt on breechblock.	—	—	—

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Raised breechblock and guided it into breech ring until breechblock came in contact with extractor plungers.	___	___	___
. Depressed plungers and moved breechblock upward.	___	___	___
. Installed breechblock crank pivots in breechblock crank.	___	___	___
. Inserted pivot in breechblock T-slot.	___	___	___
. Tripped extractors with the screwdriver and raised the breechblock to the CLOSED position.	___	___	___
. Inserted small screwdriver or rod into the hole in breechblock crank stop and slid stop to REAR position.	___	___	___
. Jiggled crank stop back and forth to assure that plunger was seated in its recess.	___	___	___
. Released tension on the chain hoist.	___	___	___
. Turned adjuster clockwise until plunger entered first recess.	___	___	___
. Removed chain hoist and eye bolt.	___	___	___
. Installed retractor guide with firing pin retractor and firing pin in its well by pushing guide forward until it was flush with inner surface of well.	___	___	___
. Installed firing pin spring and firing pin spring retainer.	___	___	___
. Depressed plunger, and twisted retainer clockwise until plunger was seated in its recess.	___	___	___
. Opened and closed breech several times to test for binding or shock.	___	___	___
. Adjusted tension on the closing spring to contact any binding or shock in breech operation.	___	___	___

#### SCORING.

To pass, Gunner must have:

- a. Checked operation of the coax and M85 machinegun (without being told) after assembling them.
- b. Completed disassembly and assembly of the coax and M85 machinegun within time specified.
- c. Been checked "Yes" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## GUNNER'S READINESS TEST

### PART C. BEFORE-OPERATIONS PROCEDURES (HO)

CONDITIONS. Fully operational M60A1 situated on level ground.

INSTRUCTIONS TO GUNNER. "Prepare the tank for a tactical mission in a nuclear environment. You will be scored on what you do as well as how you do it. I will observe your performance and serve as other crew members as needed."

#### TASKS.

- Operate tank intercommunications system.
- Charge the manual elevation system.
- \*Place the turret into power operation.
- \*Perform main gun prepare-to-fire procedures.
- Check operation of the M3 heater.

#### NOTES.

- a. Remedial training of tasks failed should be provided on the spot, but after Gunner has completed all of Part C. See Module G-3 for remedial training.
- b. The Gunner should not boresight the periscope and telescope or apply established zero.
- c. All performance measures and steps within each task must be performed in the order given.
- d. Estimated time, 3/4 hour.

#### PERFORMANCE MEASURES.

	Yes	No	NA
1. OPERATE TANK INTERCOMMUNICATIONS SYSTEM.			
. Adjusted CVC helmet to head.	_____	_____	_____
. Insured CVC helmet radio-interphone switch was in center position.	_____	_____	_____
. Connected interphone connector to plug at left bottom of control box.	_____	_____	_____
. Connected radio audio connector plug at right bottom of control box.	_____	_____	_____
. Placed control box monitor switch in either the ALL, A, INT ONLY, or B position.	_____	_____	_____
. Transmitted to TC, "GUNNER READY."	_____	_____	_____

	Yes	No	NA
2. CHARGE MANUAL ELEVATION SYSTEM			
. Rotated manual elevation handle to depress main gun until handle could no longer be rotated with one hand.	_____	_____	_____
3. PLACE TURRET INTO POWER OPERATION			
. Performed zero pressure check to insure accumulator charge of 450-500 psi.	_____	_____	_____
. Checked hydraulic power pack oil level.	_____	_____	_____
. Insured the tank and surrounding area are clear of obstruction.	_____	_____	_____
. Insured crew is in safe position and Driver has lowered his seat and has his head down.	_____	_____	_____
. Instructed Loader to release gun tube from travel lock.	_____	_____	_____
. Unlocked turret lock.	_____	_____	_____
. Announced POWER to alert the crew.	_____	_____	_____
. Checked that engine is running and set at 800 to 900 rpm.	_____	_____	_____
. Insured manual traversing handle locking lever is in detent position.	_____	_____	_____
. Turned turret power switch ON.	_____	_____	_____
. Insured that hydraulic pressure was between 1225 and 1275 psi before operation controls.	_____	_____	_____
. Squeezed magnetic brake switch and rotated Gunner's control handle to traverse turret.	_____	_____	_____
. Rotated handles rearward and forward to elevate and depress gun.	_____	_____	_____
. Checked magnetic brake.	_____	_____	_____
. Rechecked oil in turret control system.	_____	_____	_____
4. PERFORM MAIN GUN PREPARE-TO-FIRE PROCEDURES			
On command PREPARE-TO-FIRE from TC:			
. Observed Loader's action in checking replenisher tape.	_____	_____	_____
. Cleaned and inspected direct fire sights (interior).	_____	_____	_____
. Checked operation of ballistic shield.	_____	_____	_____
. Checked instrument lights.	_____	_____	_____
On command CHECK FIRING SWITCHES:			
. Turned main gun switch ON.	_____	_____	_____
. Checked firing trigger on power control handle and trigger on manual elevating control handle.	_____	_____	_____
. Checked main gun manual firing device.	_____	_____	_____
(NOTE: Announced ON THE WAY each time a trigger is checked for main gun or manual firing device is actuated.)			

Yes No NA

- . Turned main gun switch OFF.
- . Turned coaxial machinegun switch ON.
- . Checked firing trigger on manual elevating control handle.
- . Turned coaxial machinegun switch OFF.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

On command CHECK FIRING CONTROLS:

- . Set range correct knob of ballistic computer at ZERO.
- . Checked manual operation of computer for bind in computer or linkage.
- . Pushed reset button on computer.
- . Observed that pointers on computer synchronized at various indexed ranges.
- . Observed that superelevation counter indicated correct superelevation for various ammunition and ranges.
- . Turned range correction knob of ballistic computer to proper setting.
- . Reported GUNNER READY on command REPORT.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### 5. CHECK OPERATION OF M3 HEATER

On Driver's request, "CHECK GAS PARTICULATE UNIT":

- . Rotated air heater knob to ON and checked for indicator lamp operation.
- . Checked air flow through hose.
- . Allowed air to warm up for at least five minutes.
- . Checked air temperature.
- . Adjusted protective mask and attached air hose.
- . Removed and stowed air hose and protective mask.
- . Rotated air heater switch to OFF and listened for audible click.
- . Reported status of M3 heater to Driver.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### SCORING.

To pass, Gunner must have:

- a. Placed turret into power operation without cueing by scorer.
- b. Checked M3 heater operation.
- c. Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## GUNNER'S READINESS TEST

### PART D. WEAPON SYSTEMS PREPARATION (W)

**CONDITIONS.** The Gunner is in a classroom and is administered TEC pre-tests 020-171-5337-F, 020-171-5341-F, 020-171-5342-F, and 020-171-5351-F through 020-171-5355-F.

**INSTRUCTIONS TO GUNNER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number and today's date on the answer sheet. The test consists of eight parts: Boresighting the Main Gun, Rangefinder, Tele/Peri M60/M60A1 (TEC Lesson 020-171-5351-F) Boresighting the Main Gun, Rangefinder, Tele/Peri M60/M60A1 (TEC Lesson 020-171-5355-F), Preparing Periscope/Telescope for Operation (TEC Lesson 020-171-5342-F), Auxiliary Fire Control Instruments, Part 2 (Exclusive of the Azimuth Indicator) (TEC Lesson 020-171-5337-F), Boresighting the Xenon Searchlight, M60/M60A1 Tank (TEC Lesson 020-171-5354-F), Boresighting the Machineguns M60/M60A1 Tank (TEC Lesson 020-171-5352-F), Zeroing the Main Gun and Machineguns and Setting Battlesight (TEC Lesson 020-171-5353-F), and Preparing the Ballistic Computer for Operation (TEC Lesson 020-171-5341-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish, turn in the test booklet and answer sheet to the Test Proctor."

### TASKS.

- Explain procedure for placing cross threads over end of muzzle for boresighting.
- Explain characteristics of a good boresight main gun target.
- Explain procedure for removing firing pin components from main gun.
- Identify illustration which shows boresight cross correctly aligned with target aiming point.
- Identify the point on the HEP/SABOT telescope sight, reticle that is used to align the reticle on the boresight target.
- Explain procedure for aligning the HEP/SABOT telescope reticle on boresight target.
- Identify correct deflection and elevation slip scale settings for the gunner's telescope and periscope.
- Explain procedure for aligning periscope reticle on boresight target.
- Explain procedure for aligning periscope IR reticle on boresight target.
- Explain procedure for placing periscope into operation.
- Explain procedure for placing telescope into operation.
- Explain procedure for zeroing the elevation quadrant.
- Explain primary method procedure for boresighting the searchlight.
- Explain alternate method procedure for boresighting the searchlight.

Explain procedure for zeroing the main gun.  
Explain procedure for zeroing the coax.  
Explain procedure for setting boresight.  
Explain procedure for placing the ballistic computer into operation.  
List three characteristics of a good coax boresighting target.  
Indicate correct actions to take before removing coax receiver.  
Explain action to be taken on solenoid wire and protective shield prior to removing the coax receiver.  
Explain reason for alining the main gun with boresight target prior to boresighting the coax.  
Explain steps to aline the coax and infinity sight with main gun alinement on boresight panel.

NOTES.

- a. See Module G-4 for remedial training of deficiencies.
- b. Estimated time, 1 1/4 hours.



## GUNNER'S READINESS TEST

### PART D: WEAPON SYSTEMS PREPARATION

The Test Proctor will administer the following TEC Lesson pre-tests and the Gunner will answer only those questions so indicated:

- . Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1 (020-171-5351-F) Part I
  - Gunner will answer all questions.
- . Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1 (020-171-5355) Part II
  - Gunner will answer questions 3,4,5,6, and 7.
- . Preparing Periscope/Telescope for Operation (020-171-5342-F)
  - Gunner will answer questions 1,2,3,5,6,6,9,10, and 11.
- . Auxiliary Fire Control Instruments [Exclusive of Azimuth Indicator] Part II (020-171-5337-F)
  - Gunner will answer questions 1 and 2.
- . Boresighting the Xenon Searchlight, M60/M60A1 Tank (020-171-5354-F)
  - Gunner will answer all questions.
- . Zeroing the Main Gun and Machineguns and Setting Battlesight (020-171-5353-F)
  - Gunner will answer questions 1,5,6,7,8,13,14,15 and 17.
- . Preparing the Ballistic Computer for Operation (020-171-5341-F)
  - Gunner will answer questions 1 through 10.
- . Boresighting the Machinegun [Exclusive of M85 Machinegun] (020-171-5352-F)
  - Gunner will answer questions 1,2,3,4, and 5.

GUNNER'S READINESS TEST

PART D: WEAPON SYSTEMS PREPARATION

TEC Lessons 020-171-5351-F,  
020-171-5355-F, 020-171-  
5342-F, 020-171-5337-F,  
020-171-5354-F, 020-171-  
5353-F, 020-171-5341-F,  
and 020-171-5352-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5351-F

1.

2.a.

b.

3.

4.a.

b.

c.

d.

5.

020-171-5355-F

3.

4.a.

b.

c.

d.

5.	<u>DEFL/ELE</u>
RANGEFINDER	<u>      /      </u>
TELESCOPE	<u>      /      </u>
PERISCOPE	<u>      /      </u>

6.a.

b.

c.

7.a. DAYLIGHT

b. DUSK

020-171-5342-F

1.

2.a.

b.

c.

3.

5.a.

b.

c.

d.

6.

7.a.

b.

c.

9.

10.

11.a.

b.

c.

d.

020-171-5337-F

1.

2.

020-171-5354-F

1.

2.

3.

4.

5.

6.

7.a.

b.

8.a.

b.

9.

10.

11.

020-171-5353-F

1.a.

b.

c.

5.

6.

7.a.

b.

c.

8.

13.

14.

15.a.

b.

17.a.

b.

c.

d.

020-171-5341-F

1.a.

b.

c.

2.a.

b.

3.a.

b.

c.

4.

5.a.

b.

c.

6.

7.a.

b.

c.

d.

- e.
- f.
- 8.a.
- b.
- 9.
- 10.

020-171-5352-F

- 1.a.
- b.
- c.
- 2.a.
- b.
- c.
- 3.a.
- b.
- 4.
- 5.a.
- b.
- c.

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

GUNNER'S READINESS TEST

PART D: WEAPON SYSTEMS PREPARATION

PRETEST ANSWER KEY

TEC Lessons 020-171-5351-F,  
020-171-5355-F, 020-171-  
5342-F, 020-171-5337-F,  
020-171-5354-F, 020-171-  
5353-F, 020-171-5341-F,  
and 020-171-5352-F

ANSWER KEY

BORESIGHTING THE MAIN GUN, RANGEFINDER, TELE/PERI,  
M60/M60A1 [EXCLUSIVE OF RANGEFINDER]  
(020-171-5351-F)

1. A
- 2.a. B--The strings are too loose.  
b. C--The vertical string is not properly positioned over witness mark.
3. B
- 4.a. A--B--C--D  
b.
5. A

BORESIGHTING THE MAIN GUN, RANGEFINDER, TELE/PERI,  
M60/M60A1  
(020-171-5355-F)

3. A
- 4.a. Unlock the boresight knobs, using the locking levers.  
b. Aline the boresight cross of the reticle with the target aiming point, using the boresight knobs.  
c. Lock the boresight knobs, using the locking levers.  
d. Set the slip scales.

5.		DEFL	ELE
	RANGEFINDER	3	2
	TELESCOPE	3	3
	PERISCOPE	4	4

- 6.a. Disengage the boresight knobs.
- b. Aline the reticle with the target aiming point, using the boresight knobs. Release the boresight knobs.
- c. Set the slip scales.
- 7.a. DAYLIGHT--The gunner's periscope sight must be covered with an opaque card containing a dime-sized hole.
- b. DUSK--The target must be illuminated by white light.

PREPARING PERISCOPE/TELESCOPE FOR OPERATION  
(020-171-5342-F)

PREPARING THE PERISCOPES AND TELESCOPES FOR OPERATION

PRE-TEST

1. C Gunner
2. 2 A
  - 1 B
  - 3 C
3. Adjust diopter for clear, sharp view.
5. IR power to 24V
  - Adjust diopter for sharp view of grain
  - Record diopter setting
  - Ballistic shield closed
6. on the grain rather than on the target (or) terrain
- 7.a. Ballistic shield position: open
  - b. Illuminate target with IR light
  - c. Adjust focus using focus ring
9. D.

10. A. adjusting diopter

11. 2 A

1 B

3 C

4 D

AUXILIARY FIRE CONTROL INSTRUMENTS  
[EXCLUSIVE OF AZIMUTH INDICATOR]  
(020-171-5337-F)

1. MINUS 146

2. B

BORESIGHTING THE XENON SEARCHLIGHT M60/M60A1 TANK  
(020-171-5354-F)

BORESIGHTING THE XENON SEARCHLIGHT, M60/M60A1 TANK

1. 1200 meters

2. Zero (00)

3. Plus 5

4. Manual elevating control handle

5. Visible focus

6. Aline the searchlight's beam on the target aiming point.

7.a. A and D

b. B and C

8.a. 7 feet

b. 16 1/2 inches

9. B

10. B

11. Realine the searchlight's beam so that the bottom of the beam's brightest spot touches the reference mark.



ZEROING THE MAIN GUN AND MACHINEGUNS AND  
SETTING BATTLESIGHTS  
(020-171-5353-F)

- 1.a. Known range (as close to 1200 meters as possible)
  - b. Right angles
  - c. Permanent
- 5. B
- 6. 1200 meter range line
- 7.a. Gunner's periscope IR reticle
  - b. Rangefinder main gun laying reticle
  - c. Rangefinder auxiliary gun laying reticle
- 8. Record the slip scale settings
- 13. B
- 14. B
- 15.a. Fire a 20-30 round burst
  - b. Adjust the machinegun as necessary to move the strike zone onto the target aiming point.
- 17.a. Index 1600 meters into the rangefinder
  - b. Index HEAT ammunition into the computer
  - c. Put the main gun on SAFE
  - d. Load HEAT ammunition into the main gun

PREPARING THE BALLISTIC COMPUTER FOR OPERATION  
(020-171-5341-F)

- 1. C--Turn computer ON
  - A--Check to make sure it's on
  - B--Adjust illumination of the computer dials
- 2.a. A
  - b. Rotate it

- 3.a. The inner pointer will show the same range as the rangefinder range scale.
- b. The outer pointer will align itself with the inner pointer
- c. The shafts will rotate
4. B
- 5.a. Turn the handle clockwise until it stops
- b. Push the handle in or pull it out to select ammunition
- c. Release the handle slowly
6. C
- 7.a. Push in on the handcrank
- b. Check the reset light to make sure it's on
- c. Rotate the handcrank (either clockwise or counterclockwise)
- d. Check the mil counter for a change in mil reading
- e. Pull the handcrank out
- f. Press the reset button
- 8.a. Manual mode
- b. Electrical mode
9. Press the reset button
10. The reset light will go out

BORESIGHTING THE MACHINEGUNS [EXCLUSIVE OF M85]  
(020-171-5352-F)

- 1.a. Known range (as close to 1200 meters as possible)
- b. Right angles
- c. Permanent
- 2.a. safe
- b. unloaded
- c. forward

3.a. A--Solenoid wire being removed

B--Protective shield being removed

b. B, then A

4. Aline the main gun on the target aiming point

5.a. Loosen the vertical mounting screws and vertically aline the coax gun bore on the target aiming point, using the vertical adjusting setscrews. Retighten vertical mounting screws.

b. Loosen the horizontal bracket mounting screws and horizontally aline the coax gun bore on the target aiming point, using the horizontal adjusting setscrews. Retighten the horizontal bracket mounting screws.

c. Adjust the infinity sight reticle with the infinity sight boresight knobs, so that the reticle encircles the target aiming point.

#### SCORING KEY.

Award 5 points for each correct response (560 possible points).

PASSING SCORE = 500 points.

## GUNNER'S READINESS TEST

### PART E. WEAPON SYSTEMS PREPARATION (110)

**CONDITIONS.** Fully operational M60A1 situated on level ground with BII and coax mounted. Boresight and zero panels are at 800 meters for coax, and 1200 meters for main gun.

**INSTRUCTIONS TO GUNNER.** "Prepare the weapon systems on your tank for a tactical operation. Your activities should include preparing the azimuth indicator for operation and operating the elevation quadrant. If necessary, I will give you the information for your shot groups during zeroing. You will be scored on what you do as well as how you do it. I will observe your performance and serve as the TC and Loader as needed."

#### TASKS.

- Prepare the tank for boresighting.
- Prepare the Gunner's telescope for operation.
- Prepare the Gunner's periscope for daylight operation.
- \*Operate the azimuth indicator.
- \*Operate the elevation quadrant.
- \*Boresight the Gunner's telescope and apply established zero.
- \*Boresight the daylight sight of the Gunner's Periscope and apply established zero.
- \*Boresight the IR sight of Gunner's periscope, during daylight, and apply established zero.
- #Boresight tank searchlight using primary method.
- #Boresight tank searchlight using alternate method.
- \*\*Boresight coax.
- \*Zero tank main gun.
- \*Zero coax.
- \*Index announced ammunition into computer and conduct computer check.

#### NOTES.

- a. Gunner should not be given this test until he has passed Gunner's Readiness Test, Part A and completed the written TEC Lesson pre-tests for Gunner's Readiness Test, Part B and any remedial training necessary on TEC Lessons failed.
- b. Remedial training of tasks failed should be provided on the spot but after Gunner has completed Part D. See Module G-5 for remedial training.

- c. Task 9 (Boresight tank searchlight using primary method) must be performed at night. This task should be performed concurrently with TC Task E-5.
- d. Task 10 (Boresight tank searchlight using alternative method) must be performed at a location where a wall is available to reflect the beam.
- e. If live fire cannot be used to zero the weapons, the test administrator must arrange for simulated firing and simulated shot groups. The simulated shot group can be accomplished by having panels to represent target hits.
- f. In the Performance Measures section which follows, the role of scorer as TC or Loader is indicated by "TC" or "Loader". For example, Performance E-1., "Prepare Tank for Boresighting" begins with the statement, "After 'Loader' placed black thread over..." The scorer, acting as Loader, should remove the firing mechanism.
- g. All performance measures and steps within each task should be performed in the order given.
- h. Cross training tasks are indicated by a # symbol.
- i. Estimated time, 1 1/4 hours.

#### PERFORMANCE MEASURES.

##### 1. PREPARE TANK FOR BORESIGHTING

(Gunner as TC)

- . Directed Driver to position tank on level ground.

(Gunner as Loader)

- . Placed black thread over witness lines on muzzle end of main gun and secured thread tautly.
- . Removed firing mechanism from breechblock.
- . Centered right telescope of binocular over firing pin hole.
- . Checked alinement of main gun by sighting through firing pin hole with binocular to see if cross threads lay on aiming point.
- . Reported gun out of alinement (or reported gun correctly alined).

Yes No NA

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Yes No NA

(Gunner as Gunner)

After "Loader" removed firing mechanism from breech-block:

- . Alined axis of main gun bore on right angle of aiming point by operating manual traversing and elevating handles.

\_\_\_

## 2. PREPARE GUNNER'S TELESCOPE FOR OPERATION

- . Inspected eyepiece hanger and screws for presence and tightness.
- . Inspected hanger assembly and quick-disconnect pin for presence, proper fit, and swivel movement.
- . Inspected holder assembly to ensure that pin on telescope and slot on holder assembly are seated.
- . Adjusted headrest by loosening adjusting nut and sliding headrest to desired position and tightening nut.
- . Cleaned lenses.
- . Focused eyepiece by rotating diopter to maximum plus reading and then rotating back until view through eyepiece appears with maximum sharpness.
- . Set reticle illumination by rotating the rheostat knob on instrument light M50.
- . Removed filters from filter box.
- . Cleaned if required, and inspected for cracks.
- . Selected proper filter if conditions warrant use of filters.
- . Attached filter to telescope eyepiece.
- . Viewed through eyepiece and moved reticle selector to each position checking to see that both reticles are visible.

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## 3. PREPARE GUNNER'S PERISCOPE FOR DAYLIGHT OPERATION

- . Inspected M118 mount for general condition.
- . Reported any damage to mount to vehicle commander.
- . Adjusted daylight and IR headrest for proper fit.
- . Opened ballistic shield.
- . Adjusted diopter on daylight sight by rotating diopter to maximum-plus reading and then back until image seen through eyepiece appeared with maximum sharpness.
- . Set reticle illumination by rotating light source control knob until reticle appeared with desired brightness.

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	Yes	No	NA
4. OPERATE THE AZIMUTH INDICATOR			
. Rotated rheostat knob until desired brightness was obtained.	_____	_____	_____
. Placed aiming cross of periscope on reference point.	_____	_____	_____
. Performed accuracy test by manually traversing turret 360 degrees to return to original reference point.	_____	_____	_____
. Set micrometer and azimuth pointers on zero.	_____	_____	_____
. Performed slippage test by traversing the turret rapidly in power and stopping suddenly.	_____	_____	_____
. Repeated this operation two or more times in same direction.	_____	_____	_____
. Traversed turret manually in opposite direction to return to original reference point.	_____	_____	_____
. Insured that both micrometer and azimuth pointers were on zero.	_____	_____	_____
5. OPERATE ELEVATION QUADRANT			
. Placed aiming point on center of target and established a line of sight.	_____	_____	_____
. Measured position of gun tube by rotating micrometer knob until bubble is centered in level vial.	_____	_____	_____
. Read elevation from elevation and micrometer scales.	_____	_____	_____
6. BORESIGHT GUNNER'S TELESCOPE AND APPLY ESTABLISHED ZERO			
. Set superelevation counter on the ballistic computer to ZERO.	_____	_____	_____
. Moved reticle selector switch until reticle corresponding to type of ammunition that will be used to zero can be seen through eyepiece.	_____	_____	_____
. Unlocked telescope mount elevation and deflection boresight knobs.	_____	_____	_____
. Rotated boresight knobs until the boresight aiming point was in same position as muzzle cross threads.	_____	_____	_____
. Moved elevation and deflection knob locking levers to LOCK position.	_____	_____	_____
. Rotated slip scales on the elevation and deflection knobs to read 3 and 3.	_____	_____	_____
. Told Loader to confirm that muzzle cross threads are on aiming point.	_____	_____	_____
. Obtained established zero from DA Form 2404.	_____	_____	_____
. Unlocked telescope mount elevation and deflection boresight knobs.	_____	_____	_____
. Rotated boresight knobs until established zero was indicated on the slip scales.	_____	_____	_____
. Locked telescope mount elevation and deflection boresight knobs.	_____	_____	_____

	Yes	No	NA
7. BORESIGHT DAYLIGHT SIGHT OF GUNNER'S PERISCOPE AND APPLY ESTABLISHED ZERO			
. Sighted through eyepiece, disengaged elevation and deflection boresight knobs, and rotated knobs until aiming cross was on same aiming point as muzzle cross threads.	—	—	—
. Rotated slip scale on the elevation and deflection boresight knobs to read 4 and 4.	—	—	—
. Checked to assure that daylight sight reticle was on aiming point.	—	—	—
. Told Loader to confirm that muzzle cross threads were on aiming point.	—	—	—
. Obtained established zero from DA Form 2404.	—	—	—
. Unlocked periscope mount elevation and deflection boresight knobs.	—	—	—
. Rotated boresight knobs until established zero was indicated on the slip scales.	—	—	—
. Locked periscope mount elevation and deflection boresight knobs.	—	—	—
8. BORESIGHT IR SIGHT OF GUNNER'S PERISCOPE DURING DAYLIGHT AND APPLY ESTABLISHED ZERO			
. Opened the ballistic shield.	—	—	—
. Placed opaque material over periscope head assembly with a 3/4 inch hole in line with IR body.	—	—	—
. Placed IR switch in the 1.5 volt position.	—	—	—
. Viewed through IR eyepiece and rotated IR diopter to maximum plus reading then back until grain on converter tube surface as seen through eyepiece appeared clear and sharp.	—	—	—
. Rotated light source control until reticle illumination had the desired brightness.	—	—	—
. Sighted through eyepiece and rotated focusing ring until target appeared with maximum sharpness.	—	—	—
. Disengaged and rotated elevation and deflection boresight knobs until aiming cross of reticle was alined on same aiming point as muzzle cross threads.	—	—	—
. Rotated slip scale on the elevation and deflection boresight knobs to read 4 and 4.	—	—	—
. Checked to insure that aiming cross on reticle of daylight scope was on aiming point.	—	—	—
. Told Loader to confirm that the muzzle cross threads were on aiming point.	—	—	—
. Obtained established zero from DA Form 2404.	—	—	—
. Disengaged and rotated elevation and deflection boresight knobs until established zero was indicated on the slip scale.	—	—	—
. Engaged elevation and deflection boresight knobs.	—	—	—



		<u>Yes</u>	<u>No</u>	<u>NA</u>
9.	BORESIGHT TANK SEARCHLIGHT USING PRIMARY METHOD			
	(Gunner as TC)			
	. Selected a target as near to 1200 meters as possible.	___	___	___
	. Told Driver to idle engine at 1000-1200 rpm.	___	___	___
	. Turned searchlight main power switch to the ON position and turned searchlight control to VIS FOCUS mode.	___	___	___
	(Gunner as Gunner)			
	After "TC" turned searchlight ON and control to VIS FOCUS mode:			
	. Removed all superelevation from the fire control system using computer's superelevation handcrank.	___	___	___
	. Laid aiming cross of primary sight on center of the boresight panel or target chosen.	___	___	___
	. Centered bubble on elevation quadrant using micrometer knob.	___	___	___
	. Applied plus 5 mils on elevation quadrant using micrometer knob.	___	___	___
	. Manually elevated gun until bubble was centered.	___	___	___
10.	BORESIGHT TANK SEARCHLIGHT USING ALTERNATE METHOD			
	(Gunner as TC)			
	. Directed Driver to position tank so the searchlight was approximately 10 meters from a wall.	___	___	___
	. Drew a cross on the wall approximately 7 feet from the ground.	___	___	___
	. Drew a second cross 16 1/2 inches directly above the first cross and vertically in line with the first cross.	___	___	___
	. Told Driver to insure that the tank engine was run at a fast idle speed.	___	___	___
	. Turned searchlight main power switch to ON position and turned searchlight control to VIS FOCUS mode.	___	___	___
	. Adjusted horizontal and vertical adjustment screws until the searchlight beam was centered on the upper cross.	___	___	___
	. Told Loader to draw reference mark at the bottom edge of the searchlight beam.	___	___	___
	. Adjusted vertical and horizontal adjustment screws until the bottom of the searchlight beam was above and just touching the reference mark.	___	___	___

Yes No NA

(Gunner as Gunner)

After "TC" laid the bottom of the searchlight beam above and just touching the reference mark:

- . Removed superelevation from fire control system using computer's handcrank. \_\_\_
- . Boresighted main gun on lower cross. \_\_\_
- . Centered bubble on elevation quadrant using micrometer knob. \_\_\_
- . Applied plus 5 mils to elevation quadrant using micrometer knob. \_\_\_
- . Manually elevated gun until bubble was centered \_\_\_

# 11. BORESIGHT THE COAX

(Gunner as Loader)

- . Removed solenoid electrical lead from machinegun backplate assembly by pulling solenoid plug down. \_\_\_
- . Pulled right disconnecter ring rearward to disengage disconnecter pin from disconnecter hole. \_\_\_
- . Rotated receiver downward and pulled rearward until disengaged from mounting block. \_\_\_
- . Loosened support setscrews located in gun mount cover shield collar approximately 1 1/2 turns. \_\_\_
- . Selected target employed to boresight main gun with a clearly defined right angle at a distance of 1200 meters. \_\_\_
- . Alined machinegun bore vertically on target while viewing aiming point through right binocular of M17A1 so as to adjust machinegun elevation alignment with bore of main gun by loosening or tightening adjusting screws. \_\_\_
- . Alined machinegun bore horizontally while viewing aiming point through right binocular of M17A1 so as to adjust machinegun azimuth alignment with bore of main gun by loosening or tightening front end and rear horizontal adjusting screws. \_\_\_
- . Insured that all lock and jam nuts are tightened securely. \_\_\_
- . Adjusted support setscrews, in gun mount cover shield collar until they contacted flash suppressor body then backed them off 1/4 to 1/2 turn. \_\_\_

Yes No NA

(Gunner as Gunner)

After "Loader" tightened both horizontal adjustment screws:

- . Rotated either to left or right, rheostat knob on infinity sight M44C for periscope M31 or rheostat knob of light source control for periscope M32 in order to adjust brightness of reticle. \_\_\_\_\_
- . Rotated both elevation and deflection boresight knobs on infinity sight so as to aline center reticle on aiming point of target. \_\_\_\_\_

## 12. ZERO MAIN GUN

(Gunner as TC)

- . Turned computer switch ON. \_\_\_\_\_
- . Indexed range into rangefinder. \_\_\_\_\_

(Gunner as Gunner)

After "TC" turned computer ON:

- . Assured range correction knob of ballistic computer is indexed correctly. \_\_\_\_\_
- . Indexed ammunition element into ballistic computer. \_\_\_\_\_
- . Laid sight reticle on center of mass of target by operating manual elevation and traversing handles. \_\_\_\_\_

After "Loader" announced UP:

- . Fired a three-round shot group. \_\_\_\_\_
- . Unlocked boresight knobs and moved sight reticle to center of shot group, without disturbing lay of gun (with gun loaded). \_\_\_\_\_
- . Relaid main gun back to center of mass by operating the manual elevation and traversing handles. \_\_\_\_\_
- . Fired a check round. \_\_\_\_\_
- . Relaid main gun back to center of mass by operating manual elevation and traversing handles. \_\_\_\_\_
- . Unlocked boresight knobs of Gunner's sight not used to zero and rotated knobs until proper portion of reticle was laid on target aiming point. \_\_\_\_\_
- . Recorded elevation and deflection readings on all sights on DA Form 2404. \_\_\_\_\_

### 13. ZERO COAX

(Gunner as TC)

- . Rotated the range knob of the rangefinder to range to the target. \_\_\_\_\_

(Gunner as Gunner)

- . Selected a target with a clearly defined aiming point at a known range as near 800 meters as possible. \_\_\_\_\_
- . Indexed lowest velocity tank main gun ammunition in ballistic computer. \_\_\_\_\_
- . Sighted through unity power window of Gunner's periscope and laid target in center of aiming circle by operating manual elevation and traversing handles. \_\_\_\_\_

After "Loader" announced UP:

- . Placed electrical machinegun switch on Gunner's panel in ON position. \_\_\_\_\_
- . Depressed electrical firing trigger and fired a 20-25 round burst. \_\_\_\_\_
- . Observed strike of rounds in relation to target. \_\_\_\_\_
- . Rotated infinity sight boresight knobs to move sight reticle so that strike area is in center of field of view. \_\_\_\_\_
- . Fired additional 20-25 round burst to check accuracy of adjustment. \_\_\_\_\_
- . Rotated infinity sight boresight knobs, if necessary, to readjust the field of view in relation to strike of rounds. \_\_\_\_\_

### 14. INDEX ANNOUNCED AMMUNITION INTO COMPUTER AND CONDUCT COMPUTER CHECK

- . Rotated ammunition selector handle 30 degrees clockwise, pushed handle in or pulled handle out to select ammunition to be fired as indicated on the ammunition indicator. \_\_\_\_\_

(Computer check)

- . With range correction knob at zero, rotated range knob on rangefinder and determined whether inner (range) pointer indicated same range on computer range dial as was indexed on range scale of rangefinder. \_\_\_\_\_
- . Indexed ranges of 1,000, 1,200, or 2,000 meters on range scale of rangefinder. \_\_\_\_\_

- . Indexed a type of ammunition into the computer. \_\_\_\_\_
- . Turned the computer ON and determined whether super-elevation actuator shaft rotated. \_\_\_\_\_
- . Determined whether outer (superelevation) pointer moved to match inner (range) pointer. \_\_\_\_\_
- . Determined whether correct superelevation for range and ammunition selected was indicated on the super-elevation mil counter (used firing tables). \_\_\_\_\_

#### SCORING.

##### To pass:

- a. The Gunner must be checked "Yes" on each performance measure.
- b. The TC (scorer) must verify that optics and weapons are boresighted by confirming that reticle aiming crosses are on same aiming point as muzzle cross threads.
- c. Range read to target on range scale (Task 14) must be  $\pm 50$  meters of actual range.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## GUNNER'S READINESS TEST

### PART F. COMBAT LOADING (W)

**CONDITIONS.** The Gunner is in a classroom and is administered TEC pre-tests 020-171-5331-F, 020-171-5332-F, 020-171-5346-F through 020-171-5348-F.

**INSTRUCTIONS TO GUNNER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number and today's date on the answer sheet. The test is in five parts: Tank Ammo: Selecting Ammunition (TEC Lesson 020-171-5331-F), Tank Ammo: Handling, Main Gun (TEC Lesson 020-171-5332-F), 105MM Gun: Loading (TEC Lesson 020-171-5346-F), 105MM Gun: Misfire Procedures (TEC Lesson 020-171-5347-F), and 105MM Gun: Unloading (020-171-5348-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and the answer sheet to the Test Proctor."

### TASKS.

- Identify various types of main gun ammunition.
- Identify various types of machinegun ammunition.
- Identify correct method of linking machinegun ammunition.
- Match various types of main gun ammunition with various types of targets.
- Explain "Loader's" action upon hearing a main gun fire command.
- Explain procedure for loading a main gun round into the chamber.
- Explain safety precautions when operating the breech operating handle.
- Explain "Loader's" main gun misfire procedures after Gunner has tried all firing circuits.
- Explain "Loader's" misfire procedures for a cool gun and a hot gun after all firing actions have failed.
- Explain procedure to follow when unable to remove a misfired round from a hot gun.
- Explain position of "Loader's" safety switch before unloading a misfired round.
- Explain procedure for removing a round partially stuck in the chamber.
- Explain procedure for removing a projectile stuck in the tube.
- Explain how to close the breech manually.
- Explain procedure for testing the firing circuit.

NOTES.

- a. See Module G-6 for remedial training of deficiencies.
- b. Estimated time, 3/4 hour.

## GUNNER'S READINESS TEST

### PART F: COMBAT LOADING

The Test Proctor will administer the following TEC Lesson pre-tests and the Gunner will answer only those questions indicated:

- . Tank Ammo: Selecting Ammunition (020-171-5331-F)
  - Gunner will answer all questions.
- . Tank Ammo: Handling, Main Gun (020-171-5332-F)
  - Gunner will answer questions 3, 4, and 6.
- . 105MM Gun: Loading (020-171-5346-F)
  - Gunner will answer all questions.
- . 105MM Gun: Misfire Procedures (020-171-5347-F)
  - Gunner will answer all questions.
- . 105MM Gun: Unloading (020-171-5348-F)
  - Gunner will answer questions 1,2,3,5, and 6.



GUNNER'S READINESS TEST

PART F: COMBAT LOADING

TEC Lessons 020-171-5331-F,  
020-171-5332-F, 020-171-  
5346-F, 020-171-5347-F,  
and 020-171-5348-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5331-F

1.a.

b.

c.

d.

e.

f.

2.

3.a. \_\_\_\_\_ TRACE

b. \_\_\_\_\_ AP (armor piercing)

c. \_\_\_\_\_ BALL

d. \_\_\_\_\_ APIT (armor piercing-incendiary tracer)

e. \_\_\_\_\_ API (armor piercing incendiary)

4.

5.

6.

- 7.
- 8.
- 9.
- 10.
- 11.

020-171-5332-F

- 3.
- 4.
- 6.a.
  - b.
  - c.

020-171-5346-F

- 1.a.
  - b.
  - c.
  - d.
  - e.
  - f.
  - g.
  - h.

- 2.
- 3.

020-171-5347-F

1. FIRST MISFIRE - Gunner:

- a.
- b.
- c.
- d.

2. SECOND MISFIRE - Gunner:

- a.
- b.
- c.
- d.

3. THIRD MISFIRE - Gunner:

- a.
- b.
- c.
- d.
- e.

4. FOURTH MISFIRE - Gunner:

- a. Gunner
- b. Loader
- c. Loader
- d. Loader
- e. Loader
- f. Loader
- g. Loader

h. Loader

i. Gunner

j. Gunner

k. Gunner

l. Gunner

5. FIFTH MISFIRE

a. Cool Gun.

(1) Gunner -

(2) Loader -

(3) Loader -

(4) Loader -

b. Hot Gun.

(1) Gunner -

(2) Loader -

(3) Loader -

(4) Loader -

6.a. Loader -

b. Loader -

c. TC -

d. Loader -

020-171-5348-F

1.a.

b.

2.a.

b.

3.a.

b.

c.

d.

e.

5.

6.a.

b.

c.

d.

e.

f.

COMMENT. (Recommended remedial training, etc)

PASS FAIL

GUNNER'S READINESS TEST

PART F: COMBAT LOADING

PRETEST ANSWER KEY

TEC Lessons 020-171-5331-F,  
020-171-5332-F, 020-171-  
5346-F, 020-171-5347-F,  
and 020-171-5348-F

ANSWER KEY

TANK AMMO: SELECTING AMMUNITION  
(020-171-5331-F)

- 1.a. SABOT
- b. HEAT
- c. HEAT
- d. HEP
- e. SMOKE
- f. BEEHIVE
2. A
- 3.a. C TRACE
- b. B AP
- c. A BALL
- d. E APIT
- e. D API
4. A
5. C
6. D
7. C
8. E

- 9. D
- 10. C
- 11. B

TANK AMMO: HANDLING, MAIN GUN  
(020-171-5332-F)

- 3.
- 4.
- 6.a.
- b.
- c.

105MM GUN: LOADING  
(020-171-5346-F)

- 1. The correct actions and sequence for loading the main gun follow:
  - a. Make sure the Loader's safety switch is in the SAFE position.
  - b. Open the breech if it is closed.
  - c. Inspect the chamber for obstructions.
  - d. Select the ammunition called for. (SABOT)
  - e. Place the round two-thirds of the way into the chamber and push it the rest of the way in with the heel of the fist.
  - f. Stand clear of the recoil path and make sure the recoil path is clear.
  - g. Place the loader's safety switch in the FIRE position.
  - h. Announce UP.
- 2. B  
The Loader has his fingers extended rather than having them formed into a fist.
- 3. The operating handle will fly up with enough force to cause serious injury if it strikes the Loader.

105MM GUN: MISFIRE PROCEDURES  
(020-171-5347 F)

1. FIRST MISFIRE. The gunner:
  - a. Announces MISFIRE.
  - b. Announces ON THE WAY.
  - c. Waits one second.
  - d. Presses other (or right) trigger on the power control handle.
2. SECOND MISFIRE. The gunner:
  - a. Announces MISFIRE.
  - b. Announces ON THE WAY.
  - c. Waits one second.
  - d. Presses the trigger on the manual elevating handle.
3. THIRD MISFIRE. The gunner:
  - a. Announces MISFIRE.
  - b. Turns main gun switch on Gunner's switch box to OFF.
  - c. Announces ON THE WAY.
  - d. Waits one second.
  - e. Rotates the emergency firing device clockwise.
4. FOURTH MISFIRE. Actions of the Loader and Gunner follow:

<u>WHO</u>	<u>ACTION</u>
a. Gunner	Announces MISFIRE.
b. Loader	Puts Loader's safety switch on SAFE.
c. Loader	Waits two minutes.
d. Loader	Opens breech.
e. Loader	Rotates round one-half turn.
f. Loader	Reloads the round.



- | <u>WHO</u> | <u>ACTION</u>                                 |
|------------|---|
| g. Loader  | Puts Loader's safety switch on FIRE.          |
| h. Loader  | Announces UP.                                 |
| i. Gunner  | Puts main gun switch on FIRE.                 |
| j. Gunner  | Announces ON THE WAY.                         |
| k. Gunner  | Waits one second.                             |
| l. Gunner  | Presses <u>any</u> electrical firing trigger. |
5. FIFTH MISFIRE.
- a. Cool Gun
- (1) Gunner announces, MISFIRE.
  - (2) Loader makes sure Loader's safety switch is on SAFE.
  - (3) Loader waits two minutes to allow for a possible hangfire.
  - (4) Loader removes round from breech.
- b. Hot Gun
- (1) Gunner announces, MISFIRE.
  - (2) Loader makes sure Loader's safety switch is on SAFE.
  - (3) Loader waits two minutes to allow for a possible hangfire.
  - (4) Loader removes round from the breech, within one additional minute.
6. The following steps are taken when the Loader is unable to remove a misfired round from a hot gun within one additional minute after he has waited two minutes to allow for a possible hangfire.
- a. The Loader closes the breech.
  - b. The Loader makes sure the Loader's safety switch is in the SAFE position.
  - c. The Tank Commander orders the crew to evacuate the tank for two hours.
  - d. At the end of two hours, the Loader, assisted by other crewmen and safety personnel, removes the round.

105MM GUN: UNLOADING  
(020-171-5348-F)

- 1.a. Loader's safety switch. Wrong.
- b. Gunner's main gun switch. Wrong.
- 2.a. One crewman holds the breech operating handle down.
  - b. Another crewman pries the round out of the chamber with the ramming and extracting tool.
- 3.a. Fill the chamber with rags to cushion the base of the projectile.
  - b. Close the breech manually.
  - c. Push the rammer down the tube until the bell of the rammer is resting on the projectile, then apply steady pressure until the projectile is freed from the tube and pushed into the cushion of rags in the chamber. (Any shorter version of this answer is satisfactory as long as the rammer, steady pressure, and freed from the tube are included.)
  - d. Open the breech.
  - e. Remove the projectile.
- 5. Trip the extractors with a wooden block.
- 6.a. Make sure the main gun is not loaded.
  - b. Close the breech manually.
  - c. Insert the circuit tester between the breech block and the breech ring.
  - d. Turn the master battery, turret power, and main gun switches ON. Place the Loader's safety in the FIRE position.
  - e. Press the firing triggers on the power control handle, the manual elevating handle, and the Tank Commander's override.
  - f. Observe the lamp on the circuit tester. If it lights, the circuit is OK.

SCORING KEY.

Award 5 points for each correct response (440 possible points).

PASSING SCORE = 400 points.

## GUNNER'S READINESS TEST

### PART G: COMBAT LOADING (HO)

CONDITIONS. M60A1 tank with BII, situated on level ground. An Ammunition Stowage Plan and dummy rounds (3-ADPS, 3-HEAT, 2-HEP, 1 belt empty 7.62 machinegun and 1 belt empty .50 caliber machinegun) are located next to the tank. All main gun ammunition stowage areas are blocked off with the exception of eight slots in the ready rack; empty slate should correspond to the stowage plan and type of dummy rounds. Two dimensional cardboard representatives of 7.62mm and .50 caliber machinegun ammunition boxes are used for stowage of machinegun ammunition. Replenisher tape mock-up positioned forward of "Loader." The tape can be set at any one of four positions: one rough edge and one smooth edge, two rough edges, two smooth edges, or two long notches.

INSTRUCTIONS TO THE GUNNER. "During this test you will act as the Loader and TC. In the first part of the test assume we are preparing the tank for a combat mission. First you will stow ammunition aboard the tank in accordance with the units Ammunition Stowage Plan. Next I will give you some different settings on the replenisher mock-up and you are to tell me what actions you will take for each setting--before, during, and after firing. I will set the tape and you will go to the mock-up, feel the tape, and immediately report what action is called for. The last part of the test will be performing the duties of the Loader and TC under simulated combat conditions. We will carry ADPS ammunition in the tube for battlesight engagements, so begin by loading an ADPS round. Listen to fire commands and react accordingly. Since you will be working with dummy rounds you will have to unload the rounds between firing, but wait until I give the command to unload. During the fire commands sequence MISFIRE and a coax stoppage will be announced by the Gunner (TC Scorer). In addition you will get into the TC's position and load, clear, and apply immediate action to the .50 caliber machinegun. OK. . . First stow ammunition on the tank according to the units stowage plan."

#### TASKS.

- \*\*Stow main gun rounds according to Ammunition Stowage Plan.
- \*\*Stow machinegun ammunition according to Ammunition Stowage Plan.
- \*\*Stow coax ammunition in the ready (banana) box.
- \*\*Determine corrective action required by replenisher tape readings.
- \*\*Load main gun in response to fire commands.
- \*\*Rotate round in main gun misfire procedure.
- \*\*Unload main gun misfired round.
- \*\*Load coax.
- # Ready coax in response to fire command.
- \*\*Clear and unload coax.
- \*\*Apply immediate action to reduce coax stoppage.

##Change coax barrel.  
##Load M85.  
##Clear and unload M85.  
##Apply immediate action to reduce M85 stoppage.

NOTES.

- a. Gunner should not be given this test until he has passed Gunner's Readiness Test, Parts B, C, and F.
- b. TC should present each of the four replenisher tape settings in a series of eight settings in random order to the Loader.
- c. Remedial training for tasks failed should be provided on the spot but after the Loader has completed all of Part G. See Module G-7 for remedial training.
- d. It is necessary to perform the tasks and the steps within each task in the order given.
- e. For Performance Measures 5 and 9, TC-Scorer gives a series of fire commands, at about 15 second intervals, that requires loading the available type of dummy rounds interspersed with two or three coax commands. A suggested sequence is:
  - (1) Battlesight (SABOT) HEP, HEAT, COAX, HEP  
MISFIRE
  - (2) (Reload for battlesight) SABOT, (No "CEASE FIRE"),  
SABOT, HEAT, COAX, STOPPAGE.
- f. The MISFIRE command provides a break in the sequence. After TC-Scorer goes through MISFIRE checks, tells the "Loader to rotate the round," and round still fails to fire; he then waits two minutes for a hangfire, tells "Loader to unload the round," and assists him in doing so.
- g. Loading should be timed with a stopwatch. Timing should begin with the announcement of the ammunition element and end with the Loader's announcement UP. Time should be cumulated for each series of fire commands.
- h. Estimated time, 1 1/4 hours.

# PERFORMANCE MEASURES.

	Yes	No	NA
1. STOW MAIN GUN ROUNDS ACCORDING TO AMMUNITION STOWAGE PLAN			
. Determined, by reference to Ammunition Stowage Plan and present load, how many of each type of round was needed.	___	___	___
. Called out to assisting crewman how many of a given type of round was wanted.	___	___	___
. Insisted that round be handed in through turret nose down.	___	___	___
. Round stowed in:			
- Ready rack by placing primer end down, swinging hinge of holder up and to the left, pulling out spring loaded knob on rod of holder, sliding hinge slot over rod behind knob, and releasing the knob.	___	___	___
- Tubular stowage rack by pushing round in nose first, swinging handle lock over primer end of round, and rotating handle lock securely in place.	___	___	___
- Turret bustle by seating round with nose toward inside of turret, swinging hinge up and to the left, pulling up clamp and slotting hinge in place below clamp, and pulling clamp down.	___	___	___
. Completed stowage of rounds one type at a time.	___	___	___
2. STOW MACHINEGUN AMMUNITION ACCORDING TO AMMUNITION STOWAGE PLAN			
. Determined by reference to Ammunition Stowage Plan and present load, how much of each ammunition was needed.	___	___	___
. Called out to assisting crewman how much of a given type ammunition was needed.	___	___	___
. Stowed 15 boxes of 7.62 coax ammunition on the turret platform floor (used cardboard representations).	___	___	___
. Stowed 600 rounds of 7.62 coax ammunition in the ready round (banana) ammunition box. (See Task 13)	___	___	___
. Stowed 8 boxes of .50 cal ammunition on the turret platform floor (used cardboard representations).	___	___	___
. Stowed 180 rounds of .50 cal. ammunition in the ready round ammunition box.	___	___	___

	Yes	No	NA
3. STOW COAX AMMUNITION IN READY (BANANA) BOX			
. Removed ammunition from metal packing box.	___	___	___
. Inspected ammunition for serviceability and dirt.	___	___	___
. Cleaned ammunition if required.	___	___	___
. Linked 600 rounds together in one belt.	___	___	___
. Opened ready box cover.	___	___	___
. Placed 600 round belt in ready box with projectile end of round toward turret wall.	___	___	___
. Fed at least ten rounds of ammunition through ammunition chute in ready box cover.	___	___	___
. Closed ready box cover.	___	___	___
4. DETERMINE CORRECTIVE ACTION REQUIRED BY REPLENISHER TAPE READINGS			
. Took no action if felt one rough edge and one smooth edge.	___	___	___
. Added oil to replenisher (after announcing CEASE FIRE, if during firing) if felt rough edges on both sides of the tape.	___	___	___
. Continued to check tape frequently during firing if felt smooth edges on both sides of tape, but drained oil from replenisher at first opportunity.	___	___	___
. Drained oil from replenisher (after announcing CEASE FIRE, if during firing) if felt two long notches on tape.	___	___	___
. Took correct action upon feeling rough edges on both sides of replenisher tape.	___	___	___
. Took correct action upon feeling smooth edges on both sides of replenisher tape.	___	___	___
. Took no action upon feeling one rough edge and one smooth edge on replenisher tape.	___	___	___
. Took corrective action upon feeling two long notches on replenisher tape.	___	___	___
5. LOAD MAIN GUN IN RESPONSE TO FIRE COMMANDS			
a. Battlesight, SABOT loaded.			
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE.	___	___	___
. Announced UP.	___	___	___
. Prepared to load a second round in case no CEASE FIRE is given.	___	___	___

	Yes	No	NA
b. Main gun not loaded.			
. Placed firing safety switch in SAFE position.	___	___	___
. [Checked replenisher tape.]	___	___	___
. Opened breech.	___	___	___
. Selected announced ammunition.	___	___	___
. Unlocked ammunition ready rack.	___	___	___
. Inserted appropriate round into chamber by placing the round 2/3rds into chamber and pushing it rest of way with heel of fist, swinging arm up and away from closing breech.	___	___	___
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE position.	___	___	___
. Announced UP.	___	___	___
c. SABOT loaded, different ammunition element given.			
. Placed firing safety switch in SAFE position.	___	___	___
. [Checked replenisher tape.]	___	___	___
. Unloaded SABOT round.	___	___	___
. Placed and locked SABOT round in ready rack.	___	___	___
. Selected announced ammunition.	___	___	___
. Unlocked ammunition ready rack.	___	___	___
. Inserted appropriate round into chamber by placing round 2/3rds into chamber, and pushing it rest of way with heel of fist, swinging arm up and away from closing breech.	___	___	___
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE position.	___	___	___
. Announced UP.	___	___	___
. Prepared to load a second round in case no CEASE FIRE was given.	___	___	___
6. ROTATE ROUND IN MAIN GUN MISFIRE PROCEDURE			
On Gunner's command ROTATE ROUND:			
. Placed firing safety switch in SAFE position.	___	___	___
. Opened breech slowly enough to extract round about 1/2 way.	___	___	___
. Rotated round 1/2 turn.	___	___	___
. Pushed round into chamber with heel of fist, swinging arm up and away from closing breech.	___	___	___
. Stood clear of path of recoil.	___	___	___
. Placed firing safety switch in FIRE position.	___	___	___
. Announced UP.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
7. UNLOAD MISFIRED MAIN GUN ROUND			
. Told Gunner to turn main gun and turret power switches OFF.	___	___	___
. Placed firing safety switch in SAFE position.	___	___	___
. Opened breech.	___	___	___
. Held breech operating handle down while TC (Gunner) pried round out of chamber.	___	___	___
. Returned breech operating handle to latched position.	___	___	___
8. LOAD COAX			
. Pushed forward on rear of left cover latch rod assembly and raised cover.	___	___	___
. Raised feed tray.	___	___	___
. Placed machinegun safety in FIRE position.	___	___	___
. Charged (cocked) machinegun by pulling charger handle to rear.	___	___	___
. Inspected chamber for obstructions by looking and feeling in chamber.	___	___	___
. Placed safety in SAFE position.	___	___	___
. Lowered feed tray.	___	___	___
. Fed ammunition belt through chute of ammunition box.	___	___	___
. Placed first round of ammunition belt in feed tray slot with open side of ammunition link loops facing down.	___	___	___
. Closed machinegun cover assuring that lock rod is engaged.	___	___	___
9. READY COAX IN RESPONSE TO FIRE COMMANDS			
. Placed coax safety in FIRE position.	___	___	___
. Announced UP.	___	___	___
10. CLEAR AND UNLOAD COAX			
. Placed safety in SAFE (S) position.	___	___	___
. Pushed forward on rear of left rod assembly and opened cover assembly.	___	___	___
. Removed ammunition belt from machinegun.	___	___	___
. Lifted feed tray group, looked and felt that receiver and chamber were clear of ammunition.	___	___	___
. Placed safety in FIRE (F) position.	___	___	___
. Pulled charger handle rearward, depressed manual firing trigger and allowed barrel extension to close slowly.	___	___	___
. Placed safety in SAFE (S) position.	___	___	___
. Closed cover assembly.	___	___	___



- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| <b>11. APPLY IMMEDIATE ACTION TO REDUCE COAX STOPPAGE</b>   |            |           |           |
| On command STOPPAGE:  |            |           |           |
| . Waited 5 seconds to allow for a hangfire.   | ___        | ___       | ___       |
| . Charged the machinegun, locking the recoiling parts to the rear.  | ___        | ___       | ___       |
| . Checked to see if the ammunition was feeding into the weapon.   | ___        | ___       | ___       |
| . Pulled barrel extension to the rear.  | ___        | ___       | ___       |
| . Placed safety in SAFE.  | ___        | ___       | ___       |
| . Raised cover and removed the ammunition.  | ___        | ___       | ___       |
| . Removed misfired round from chamber.  | ___        | ___       | ___       |
| . Placed safety in FIRE (F) and hand functioned the weapon one cycle.   | ___        | ___       | ___       |
| . Reloaded the weapon.  | ___        | ___       | ___       |
| . Announced UP.   | ___        | ___       | ___       |
| <b>12. CHANGE COAX BARREL</b>   |            |           |           |
| . Opened cover assembly and removed belted ammunition.  | ___        | ___       | ___       |
| . Charged weapon to rear position and placed safety in SAFE.  | ___        | ___       | ___       |
| . Removed live ammunition or spent cartridge from weapon chamber and links from immediate area.   | ___        | ___       | ___       |
| . Insured weapon is clear by looking into and feeling receiver and chamber.   | ___        | ___       | ___       |
| . Pulled disconnecter ring to rear to allow receiver assembly to rotate downward.   | ___        | ___       | ___       |
| . Removed barrel assembly from jacket assembly.   | ___        | ___       | ___       |
| . Installed new barrel assembly in jacket assembly.   | ___        | ___       | ___       |
| . Rotated receiver assembly upward and allowed disconnecter to engage into jacket assembly mounting block.  | ___        | ___       | ___       |
| . Placed safety in FIRE and hand functioned weapon one cycle.   | ___        | ___       | ___       |
| . Loaded weapon and attempted to fire.  | ___        | ___       | ___       |
| (WARNING: Use asbestos gloves when removing a hot barrel.)  |            |           |           |
| <b>13. LOAD M85</b>   |            |           |           |
| . Unlatched and raised cover.   | ___        | ___       | ___       |
| . Visually checked and felt in chamber for round.   | ___        | ___       | ___       |
| (NOTE: If bolt is in forward position place safety in FIRE (F) position and pull charger handle rearward until bolt assembly is in rear position. Check and feel in chamber for round.) |            |           |           |

Yes No NA

- . With safety in FIRE (F) position pulled charger handle fully rearward and while keeping tension on handle pulled trigger extension handle, depressing trigger to allow bolt assembly to close slowly. \_\_\_
- . Placed .50 caliber ammunition in ammunition box and feed belt until three or four rounds are in flexible chute. \_\_\_
- . Pulled rounds into feed tray assembly. \_\_\_
- . Placed leading round of belt on tray with open side of links down so it is held by belt retaining pawls. \_\_\_
- . Closed cover assembly. \_\_\_
- . Charged machinegun. \_\_\_

14. CLEAR AND UNLOAD M85

- . Placed cupola firing safety switch in OFF position. \_\_\_
- . Held cupola electrical power control switch in OFF position momentarily. \_\_\_
- . Assured safety is in SAFE (S) position. \_\_\_
- . Unlatched and opened cover assembly. \_\_\_
- . If bolt assembly was in forward position placed safety in FIRE (F) position and pulled charger handle until bolt assembly was fully rearward. \_\_\_
- . Keeping tension on charger handle pulled trigger extension handle to depress trigger and allowed bolt assembly to close slowly. \_\_\_
- . Placed safety in SAFE (S) position. \_\_\_

15. APPLY IMMEDIATE ACTION TO REDUCE STOPPAGE OF M85

- . Waited 5 seconds to allow for hangfire. \_\_\_
- . Charged the machinegun locking recoiling parts to rear. \_\_\_
- . Checked to see if ammunition was feeding into machinegun. \_\_\_
- . Attempted to fire weapon. \_\_\_
- . Charged the machinegun to sear position. \_\_\_
- . Rotated safety to SAFE (S). \_\_\_
- . Raised cover and removed ammunition. \_\_\_
- . Removed misfired round from chamber. \_\_\_
- . Rotated safety to FIRE (F) position and hand functioned the weapon one cycle. \_\_\_
- . Reloaded the weapon. \_\_\_
- . Attempted to fire weapon. \_\_\_

SCORING.

To pass, the Gunner must have:

- a. Stated the correct action for each of the right test trials for during-firing and before-firing conditions.
- b. Responded in each trial without hesitation, immediately after feeling the tape.
- c. Executed the first five fire commands in a total time of 35 seconds, and the second four commands (five loading reactions) in 1 minute 35 seconds.
- d. Responded to MISFIRE, including unloading the misfired round, within 2 1/2 minutes.
- e. Responded to STOPPAGE by removing misfired round within 10 seconds of command, and completed procedure within 15 seconds.
- f. Selected the correct round in response to each fire command.
- g. Checked replenisher tape at least once during the test.
- h. Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## GUNNER'S READINESS TEST

### PART H. TARGET ACQUISITION (W)

**CONDITIONS.** The Gunner is in a classroom and is administered TEC pre-tests 020-171-1611-F, 020-171-1612-F, 020-171-1614-F, and 935-171-0203-F.

**INSTRUCTIONS TO GUNNER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of four parts: Target Range Estimation (TEC Lesson 020-171-1611-F), Locating and Reporting Targets (TEC Lesson 020-171-1612-F), Target Acquisition and Scanning Techniques (TEC Lesson 020-171-1614-F), and Armor Vehicle Recognition (TEC Lesson 935-171-0203-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

- Explain the range estimation method in which you estimate the range half the distance to the target.
- Explain the range estimation method in which a target at a known range appears half as big as a like target at an unknown range.
- Explain the range estimation method in which a target at a known range appears twice as big as a like target at an unknown range.
- Explain location of targets by the clock system.
- Explain reporting of targets by the clock system.
- Explain the technique of quick search scanning of an area.
- Explain ways to adapt your eyes to the darkness.
- Explain how to preserve night vision.
- Explain how to scan an area at night.
- \*Identify US and Foreign Armor Vehicles.

#### NOTES.

- a. See Module G-8 for remedial training of deficiencies.
- b. Estimated time, 1 hour.

## GUNNER'S READINESS TEST

### PART H: TARGET ACQUISITION

The Test Proctor will administer the following TEC Lesson pre-tests and the Gunner will answer only those questions so indicated:

- . Target Range Estimation (020-171-1611-F)
  - Gunner will answer questions 2, 4, and 5.
- . Locating and Reporting Targets (020-171-1612-F)
  - Gunner will answer question 1.
- . Target Acquisition Scanning Techniques (020-171-1614-F)
  - Gunner will answer questions 1, 3, 4, and 6.
- . Armor Vehicle Recognition (935-171-0203-F)
  - Gunner will identify all vehicles shown on TEC tapes, vehicle 1 through vehicle 17.

GUNNER'S READINESS TEST

PART H: TARGET ACQUISITION

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1611-F

2. Step a.

Step b.

Step c.

4.

5.

020-171-1612-F

1.a. Target:

b. Posture:

c. Direction:

d. Range:

020-171-1614-F

1.

3.

4.

6.a.

b.

935-171-0203-F

<u>VEHICLE</u>	<u>COUNTRY</u>	<u>VEHICLE</u>	<u>COUNTRY</u>
1.		10.	
2.		11.	
3.		12.	
4.		13.	
5.		14.	
6.		15.	
7.		16.	
8.		17.	
9.			

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

## GUNNER'S READINESS TEST

### PART H: TARGET ACQUISITION

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F

#### ANSWER KEY

#### TARGET RANGE ESTIMATION (020-171-1611-F)

2. The Gunner's diagram or description must include three steps:
  - Step a. Divide the distance to the target in half.
  - Step b. Estimate the distance to the halfway point in 100 meter increments.
  - Step c. Double the range for estimated range to target.
4. 1000 meters.
5. 600 meters.

#### LOCATING AND REPORTING TARGETS (020-171-1612-F)

- 1.a. Target: TANK
  - b. Posture: MOVING LEFT
  - c. Direction: ONE O'CLOCK (12:00 or 2:00 is acceptable)
  - d. Range: ONE FIVE HUNDRED



**TARGET ACQUISITION SCANNING TECHNIQUES**  
(020-171-1614-F)

1. A, C
3. B, C
4. A
- 6.a. Short, jerky movements.
- b. Pause a few seconds at each point.

**ARMOR VEHICLE RECOGNITION**  
(935-171-0203-F)

	<u>VEHICLE</u>	<u>COUNTRY</u>		<u>VEHICLE</u>	<u>COUNTRY</u>
1.	AMX-30	French	10.	AMX-13	French
2.	M60	U.S.	11.	M60A1	U.S.
3.	CHIEFTON	British	12.	JAG-PANZER	German
4.	ASU-57	Soviet	13.	PT-76	Soviet
5.	M551	U.S.	14.	T-34	Soviet
6.	T-10	Soviet	15.	LEOPARD	German
7.	CENTURIAN	British	16.	ASU-85	Soviet
8.	M60A2	U.S.	17.	T-62	Soviet
9.	T-55	Soviet			

**SCORING KEY.**

Award 5 points for each correct response (165 points possible).

PASSING SCORE = 150 points.

## GUNNER'S READINESS TEST

### PART I. LOCATING AND REPORTING TARGETS (HO)

**CONDITIONS.** Fully operational M60A1 tank located at an observation point on a target acquisition course. The course includes silhouettes, tank and truck targets located at ranges from 400 meters to 1500 meters. The Gunner will observe from the infinity sight. (The tank will be positioned so the Gunner's target area of responsibility (10:00 o'clock clockwise to 2:00 o'clock) overlaps the right and left boundaries of the target acquisition course.)

**INSTRUCTIONS TO GUNNER.** "This is a test of your target acquisition ability. You will be required to scan the area, estimate range to various targets, and report target locations. React to my instructions."

#### TASKS.

Conduct a quick search scan of the area.  
\*Locate and identify targets in the area.  
Estimate range to targets in the area.  
Report location of targets in the area.

#### NOTES.

- a. Gunner should not be given this test until he has passed Gunner's Readiness Test, Part H.
- b. Tasks should be performed in order given.
- c. See example layout of Target Acquisition Course.
- d. See Module G-9 for remedial training of deficiencies.
- e. Estimated time, 3/4 hour.

#### PERFORMANCE MEASURES.

##### 1. CONDUCT A QUICK SEARCH SCAN OF THE AREA

Yes No NA

Given the special command SCAN YOUR TARGET AREA OF RESPONSIBILITY:

- . Scanned area directly in front, going close in to far out.

\_\_\_\_\_

Yes No NA

- . Scanned area to left (or right) of initial area, overlapping initial area, going from close in to far out. \_\_\_\_\_
- . Scanned area to right (or left) of initial area, overlapping initial area, going from close in to far out. \_\_\_\_\_

## 2. LOCATE AND IDENTIFY TARGETS IN THE AREA

Given the special command LOCATE AND IDENTIFY TARGETS IN THE AREA, the Gunner will have five minutes to locate and identify all targets.

- . Located and identified target 1 (TROOPS). \_\_\_\_\_
- . Located and identified target 2 (TANK). \_\_\_\_\_
- . Located and identified target 3 (TANK). \_\_\_\_\_
- . Located and identified target 4 (TRUCK). \_\_\_\_\_
- . Located and identified target 5 (TROOPS). \_\_\_\_\_
- . Located and identified target 6 (TRUCK). \_\_\_\_\_
- . Located and identified target 7 (TANK). \_\_\_\_\_
- . Located and identified target 8 (TROOPS). \_\_\_\_\_

## 3. ESTIMATE RANGE TO TARGETS IN THE AREA

Given the range of 1000 meters to target 2 and the special command DETERMINE RANGE TO ALL TARGETS IN THE AREA, the Gunner will determine the range to all targets within  $\pm 100$  meters.

- . Determined range to target 1 as 400 meters. \_\_\_\_\_
- . Determined range to target 3 as 500 meters. \_\_\_\_\_
- . Determined range to target 4 as 1200 meters. \_\_\_\_\_
- . Determined range to target 5 as 1000 meters. \_\_\_\_\_
- . Determined range to target 6 as 1200 meters. \_\_\_\_\_
- . Determined range to target 7 as 1500 meters. \_\_\_\_\_
- . Determined range to target 8 as 900 meters. \_\_\_\_\_

## 4. REPORT LOCATION OF TARGETS IN THE AREA

Given a designated target and the special command REPORT LOCATION OF TARGET NO. \_\_\_\_, the Gunner will report the type, posture (moving or stationary), location (by clock system, within one hour deviation), and range to the target (within  $\pm 100$  meters).

- . Target 1. TROOPS, STATIONARY, TEN O'CLOCK, FOUR HUNDRED. \_\_\_\_\_
- . Target 3. TANK, STATIONARY, ONE O'CLOCK, FIVE HUNDRED. \_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Target 4. TRUCK, MOVING LEFT TO RIGHT, ELEVEN O'CLOCK, ONE TWO HUNDRED.	---	---	---
. Target 5. TROOPS, STATIONARY, ONE O'CLOCK, ONE THOUSAND.	---	---	---
. Target 6. TRUCK, STATIONARY, TWELVE O'CLOCK, ONE TWO HUNDRED.	---	---	---
. Target 7. TANK, STATIONARY, TWELVE O'CLOCK, ONE FIVE HUNDRED.	---	---	---
. Target 8. TROOPS, STATIONARY, TWO O'CLOCK, NINE HUNDRED.	---	---	---

#### SCORING.

To pass, Gunner must have:

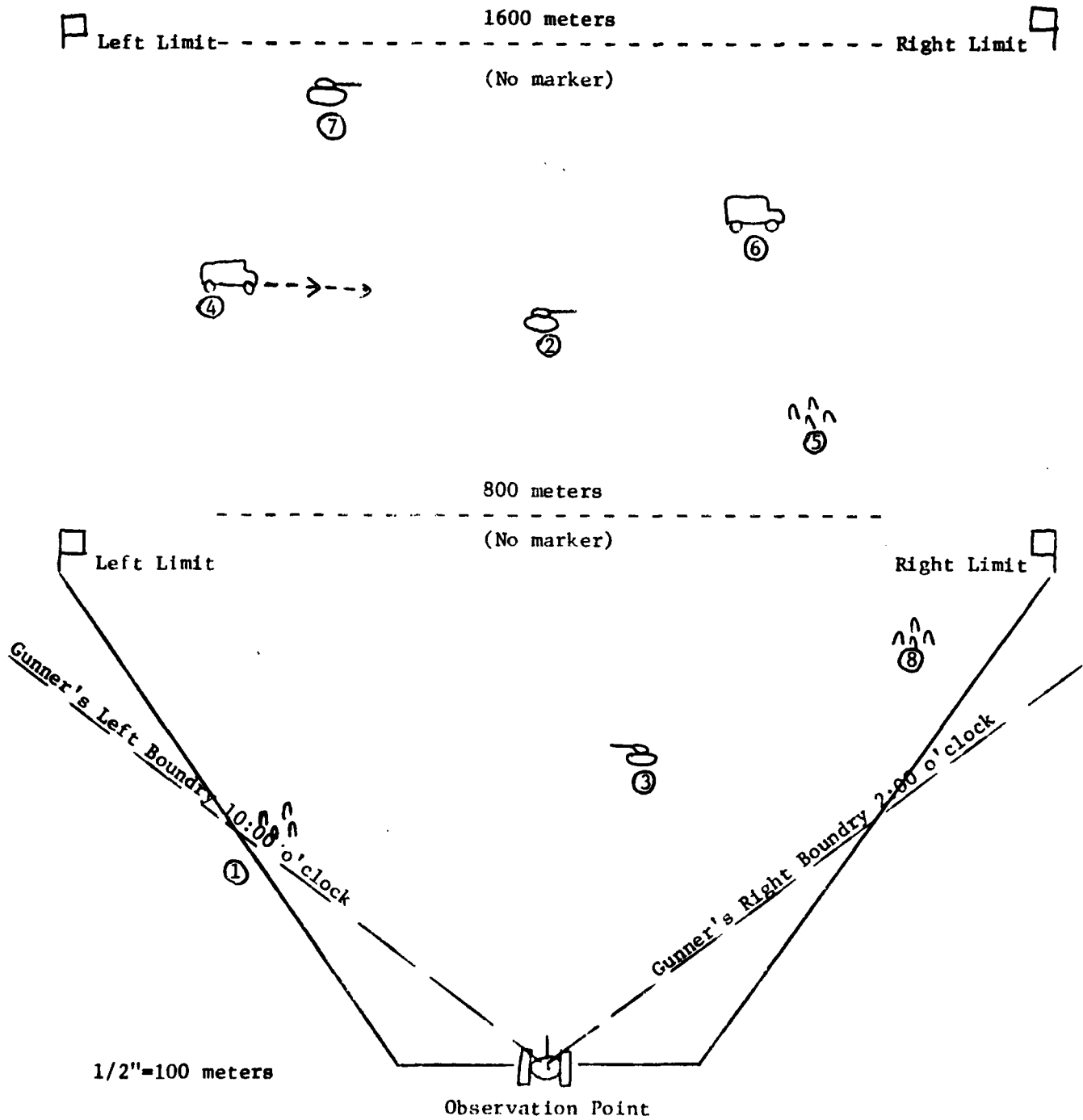
- Located and identified all targets in the area within five minutes.
- Estimated range to all targets within ± 100 meters.
- Given location of all targets within one hour deviation.
- Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

# TARGET ACQUISITION COURSE

Example. (Gunner's target area of responsibility is from 10:00 o'clock to 2:00 o'clock.)



## GUNNER'S READINESS TEST

### PART J. TACTICAL OPERATIONS (W)

CONDITIONS. The Gunner is in a classroom and is administered TEC pre-test 020-171-5364-F.

INSTRUCTIONS TO GUNNER. "You have received a test booklet and an answer sheet. Write your name, social security number, tank number and today's date on the answer sheet. The test is in one part: Machinegun Engagements (TEC Lesson 020-171-5364-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish, turn in the test booklet and the answer sheet to the Test Proctor."

#### TASKS.

Explain ammunition setting on ballistic computer when using the coax.

List correct range settings for coax targets at various ranges.

Identify correct sight pictures for engaging various targets with the coax.

#### NOTES.

- a. See Module GN-10 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.

GUNNER'S READINESS TEST

PART J. TACTICAL OPERATIONS

The Test Proctor will administer the following TEC Lesson pre-test, and the Gunner will answer only the questions so indicated:

. Machinegun Engagements (020-171-5364-F)

- Gunner will answer questions 1 through 8.

GUNNER'S READINESS TEST

PART J: TACTICAL OPERATIONS

TEC Lesson 020-171-5364-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5364-F

- |    |    |
|----|----|
| 1. | 5. |
| 2. | 6. |
| 3. | 7. |
| 4. | 8. |

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL



AD-A082 569

HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

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TANK CREWMAN (M60A1) READINESS TESTS.(U)

NOV 79 R E O'BRIEN, J H HARRIS, W C OSBORN

DAHC19-76-C 001

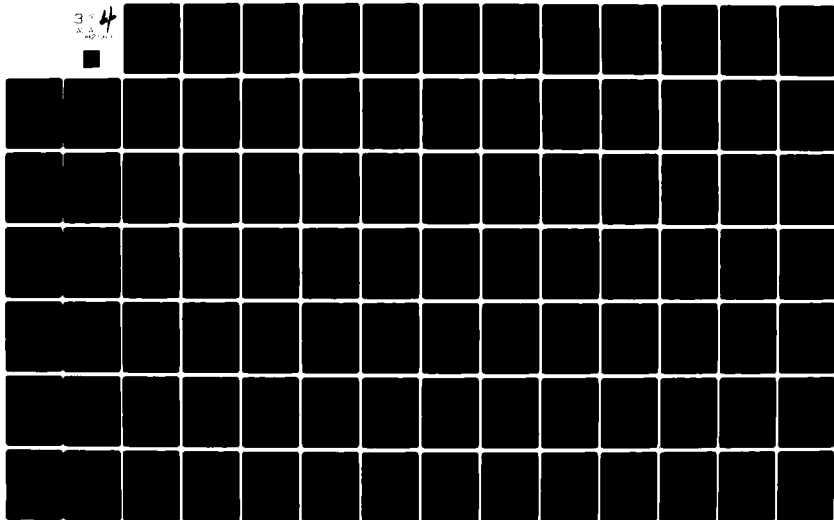
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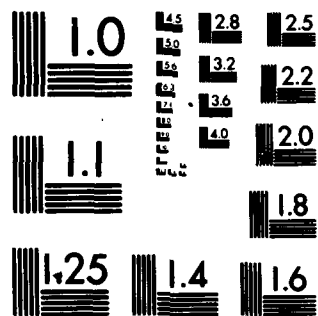
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11





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

GUNNER'S READINESS TEST

PART J. TACTICAL OPERATIONS

PRE-TEST ANSWER KEY

TEC Lesson 020-171-5364-F

ANSWER KEY

MACHINEGUN ENGAGEMENTS  
(020-171-5364-F)

- |               |         |
|---------------|---------|
| 1. HEP        | 5. B    |
| 2. A          | 6. Near |
| 3. 850 meters | 7. Near |
| 4. 500 meters | 8. Far  |

SCORING KEY.

Award 5 points for each correct response (40 possible points).

PASSING SCORE = 35 points.

## GUNNER'S READINESS TEST

### PART K. TACTICAL OPERATIONS (HO)

**CONDITIONS.** Fully operational M60A1 tank with BII, skilled driver, tank course including suitable areas for defilade and simulated targets (moving and stationary main gun, coax and M85.)

**INSTRUCTIONS TO GUNNER.** "This is a test of your ability to fight your tank. We are going on a simulated combat mission. Your tank has a basic load of ammunition and we expect to encounter enemy vehicles and troops. You will be scored on what you do as well as how you do it. Do you have any questions? . . .Ready? . . .We are pre-loading SABOT. . .Begin. . ."

#### TASKS.

Acquire targets.

\*Preset SABOT battlesight information.

Main gun battlesight engagement, moving to a halt, one stationary target, SABOT (1 Tank).

Main gun battlesight engagement, moving to a halt, two moving targets, SABOT, Gunner masked (2 Tanks).

Coax and .50 caliber engagement, moving to a halt, one stationary target and one moving target (1 Infantry Squad and 1 moving BRDM; TC engages BRDM with .50 caliber).

Main gun precision engagement, moving to a halt, three stationary targets, SABOT (2 Tanks and 1 BRDM; TC engages BRDM with .50 caliber).

\*Preset HEAT battlesight information.

Main gun battlesight engagement, moving to a halt, three stationary targets, HEAT (3 Tanks).

Coax and .50 caliber engagement, moving to a halt, three stationary targets (1 RPG Tm, 1 ATGM Tm, and 1 Infantry Squad; TC engages infantry squad with .50 caliber).

Main gun RCLDF engagement, at the halt, three stationary targets, HEAT, Gunner masked (2 Tanks and 1 Infantry Squad; TC engages infantry squad with .50 caliber).

Coax and .50 caliber engagement, at the halt, two stationary targets, Gunner masked (1 Infantry Squad and 1 BRDM; TC engages BRDM with .50 caliber).

Main gun battlesight engagement, at the halt, one stationary target and one moving target, SABOT (2 Tanks).

\*Apply immediate action in case of main gun failure to fire.

\*Apply burst-on-target (BOT) adjustment.

\*Apply target-form (TF) adjustment.

\*Apply standard adjustment.

\*Lay telescope reticle on target properly.

# NOTES.

- a. Gunner should complete Gunner's Readiness Test Parts A through J before taking this part.
- b. In the Performance Measures section which follows, the role of the scorer as TC or Loader is indicated by "TC" or "LOADER." For example, Performance Measure 3, MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, SINGLE STATIONARY TARGET, SABOT begins with the statement "After "TC" announces GUNNER." The scorer, acting as TC, should announce GUNNER.
- c. TC (scorer) must announce "MISFIRE" during one main gun engagement.
- d. TC (scorer) will indicate a miss on a battlesight engagement, he will tell the Gunner where the point of impact was, and the Gunner will apply BOT.
- e. TC (scorer) will indicate a miss on a battlesight engagement, he will tell the Gunner where the point of impact was, and the Gunner will apply target form.
- f. TC (scorer) will indicate a miss on a precision engagement, he will tell the Gunner where the point of impact was, and the Gunner will apply standard adjustment.
- g. TC (scorer) will verify sight picture each time the Gunner announces ON THE WAY.
- h. The order in which the target appears is not important.
- i. See examples of layout for "dry" TCQC course and second round adjustment targets.
- j. See Module G-11 for remedial training of deficiencies.
- k. Estimated time, 2 hours.

## PERFORMANCE MEASURES.

### 1. ACQUIRE TARGETS

- . Detected all targets in assigned sector.

Yes No NA

\_\_\_ \_\_\_ \_\_\_

### 2. PRESET SABOT BATTLESIGHT INFORMATION

- . Indexed SABOT into ballistic computer.
- . Selected ADPS reticle in Gunner's telescope.

\_\_\_ \_\_\_ \_\_\_  
\_\_\_ \_\_\_ \_\_\_

- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| 3. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT,<br>ONE STATIONARY TARGET, SABOT (1 TANK)              |            |           |           |
| After "TC" announced, GUNNER, BATTLESIGHT:  |            |           |           |
| . Turned main gun switch ON.  | ___        | ___       | ___       |
| . Indexed SABOT into ballistic computer.  | ___        | ___       | ___       |
| After "TC" announced target description:  |            |           |           |
| . Identified target and announced IDENTIFIED within<br>3 seconds.   | ___        | ___       | ___       |
| . Laid crosshair at center of base of target.   | ___        | ___       | ___       |
| . Made final precise lay.   | ___        | ___       | ___       |
| After "TC" announced FIRE:  |            |           |           |
| . Announced ON THE WAY.<br>(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)                                    | ___        | ___       | ___       |
| . Fired main gun within 7 seconds of beginning of<br>fire command.  | ___        | ___       | ___       |
| 4. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT,<br>TWO MOVING TARGETS, SABOT, GUNNER MASKED (2 TANKS) |            |           |           |
| After "TC" announced GUNNER, BATTLESIGHT:   |            |           |           |
| . Turned main gun switch ON.  | ___        | ___       | ___       |
| . Indexed SABOT into ballistic computer.  | ___        | ___       | ___       |
| After "TC" announced target description:  |            |           |           |
| . Identified target and announced IDENTIFIED within<br>3 seconds.   | ___        | ___       | ___       |
| . Applied one half lead (2 1/2 mils) in direction<br>of target apparent motion.                             | ___        | ___       | ___       |
| . Laid leadline at center of base of target.  | ___        | ___       | ___       |
| After "TC" announced FIRE:  |            |           |           |
| . Announced ON THE WAY.<br>(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)                                    | ___        | ___       | ___       |
| . Fired main gun within 7 seconds of beginning of<br>fire command.  | ___        | ___       | ___       |
| . Continued to track target.  | ___        | ___       | ___       |

	Yes	No	NA
After "TC" announced TARGET, RIGHT (LEFT) TANK:			
. Announced IDENTIFIED within 3 seconds of beginning of second fire command.	—	—	—
. Applied one half lead (2 1/2 mils) in direction of target apparent motion.	—	—	—
. Laid leadline at center of base of target.	—	—	—
After "TC" announced FIRE:			
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	—	—	—
. Fired main gun within 7 seconds of beginning of fire command.	—	—	—
. Continued to track target.	—	—	—
After "TC" announced TARGET, RIGHT (LEFT) TANK:			
. Announced IDENTIFIED within 3 seconds of beginning of fire command.	—	—	—
. Applied one half lead (2 1/2 mils) in direction of target apparent motion.	—	—	—
. Laid leadline at center of base of target.	—	—	—
After "TC" announced FIRE:			
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	—	—	—
. Fired main gun within 7 seconds of beginning of second fire command.	—	—	—
. Continued to track target.	—	—	—
5. COAX ENGAGEMENT, MOVING TO A HALT, ONE STATIONARY TARGET, COAX (1 INFANTRY SQUAD)			
After "TC" announced GUNNER, COAX:			
. Turned COAX switch ON.	—	—	—
After "TC" announced target description:			
. Identified target and announced IDENTIFIED within 3 seconds.	—	—	—
. Laid infinity sight circle on near edge of target.	—	—	—

	Yes	No	NA
After "TC" announced FIRE AND ADJUST, CALIBER FIFTY:			
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	—	—	—
. Fired coax within 7 seconds of beginning of fire command.	—	—	—
. Traverse and elevate coax for area coverage.	—	—	—
. Announced TARGET, CEASE FIRE.	—	—	—
6. MAIN GUN PRECISION ENGAGEMENT, MOVING TO A HALT, TWO STATIONARY TARGETS, SABOT (2 TANKS)			
After "TC" announced GUNNER, SABOT:			
. Turned main gun switch ON.	—	—	—
. Indexed SABOT into ballistic computer.	—	—	—
After "TC" announced target description:			
. Identified target and announced IDENTIFIED within 3 seconds.	—	—	—
. Laid crosshair at center of mass of target.	—	—	—
. Made final precise lay.	—	—	—
After "TC" announced FIRE AND ADJUST, CALIBER FIFTY:			
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	—	—	—
. Fired main gun within 7 seconds of beginning of fire command.	—	—	—
. Announced TARGET.	—	—	—
. Laid main gun on second target within 3 seconds of announcing TARGET.	—	—	—
. Laid crosshair at center of mass of target.	—	—	—
. Made final precise lay.	—	—	—
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	—	—	—
. Fired main gun within 7 seconds of announcing TARGET.	—	—	—
. Announced TARGET, CEASE FIRE.	—	—	—
7. PRESET HEAT BATTLESIGHT INFORMATION			
. Indexed HEAT into ballistic computer.	—	—	—
. Selected HEAT reticle in Gunner's telescope.	—	—	—



	<u>Yes</u>	<u>No</u>	<u>NA</u>
8. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, THREE STATIONARY TARGETS, HEAT (3 TANKS)			
After "TC" announced GUNNER, BATTLESIGHT:			
. Turned main gun switch ON.	___	___	___
. Indexed HEAT into ballistic computer.	___	___	___
After "TC" announced THREE TANKS, LEFT (RIGHT) TANK FIRST:			
. Identified target and announced IDENTIFIED within 3 seconds.	___	___	___
. Laid crosshair at center of base of target.	___	___	___
. Made final precise lay.	___	___	___
After "TC" announced FIRE:			
. Announced ON THE WAY. (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	___	___	___
. Fired main gun within 7 seconds of beginning of fire command.	___	___	___
After "TC" announced TARGET, CENTER TANK:			
. Identified target and announced IDENTIFIED within 3 seconds of TC announcing TARGET, CENTER TANK.	___	___	___
. Laid crosshair at center of base of target.	___	___	___
. Made final precise lay.	___	___	___
After "TC" announced FIRE:			
. Announced ON THE WAY: (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)	___	___	___
. Fired main gun within 7 seconds of TC announcing TARGET, CENTER TANK.	___	___	___
After "TC" announced TARGET, RIGHT (LEFT) TANK:			
. Identified target and announced IDENTIFIED within 3 seconds of TC announcing TARGET, RIGHT (LEFT) TANK.	___	___	___
. Laid crosshair at center of base of target.	___	___	___
. Made final precise lay.	___	___	___

		<u>Yes</u>	<u>No</u>	<u>NA</u>
After "TC" announced FIRE:				
. Announced ON THE WAY.		---	---	---
(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)				
. Fired main gun within 7 seconds of TC announcing TARGET, RIGHT (LEFT) TANK.		---	---	---
9. COAX ENGAGEMENT, MOVING TO A HALT, TWO STATIONARY TARGETS, COAX (1 RPG TM, 1 ATGM TM)				
After "TC" announced GUNNER COAX:				
. Turned coax switch ON.		---	---	---
After "TC" announced target description:				
. Identified target and announced IDENTIFIED within 3 seconds.		---	---	---
. Laid infinity sight circle at center of mass of target.		---	---	---
After "TC" announced FIRE AND ADJUST, CALIBER FIFTY:				
. Announced ON THE WAY.		---	---	---
(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)				
. Fired coax within 7 seconds of beginning of fire command.		---	---	---
. Announced TARGET, CEASE FIRE.		---	---	---
. Identified second target within 3 seconds of announcing TARGET, CEASE FIRE.		---	---	---
. Laid infinity sight circle at center of mass of target.		---	---	---
. Announced ON THE WAY.		---	---	---
(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)				
. Fired coax within 7 seconds of announcing TARGET, CEASE FIRE.		---	---	---
. Announced TARGET, CEASE FIRE.		---	---	---
10. MAIN GUN RCLDF ENGAGEMENT, AT THE HALT, TWO STATIONARY TARGETS, HEAT, GUNNER MASKED, PASSIVE/IR (2 TANKS)				
After "TC" announced GUNNER, DIRECT FIRE, INDEX HEP, FIRE HEAT, TANK, DEFLECTION SEVEN ZERO LEFT, ELEVEN HUNDRED, QUADRANT PLUS SIX, FIRE AND ADJUST, CALIBER FIFTY:				
. Indexed deflection reading on azimuth indicator.		---	---	---
. Traversed turret to indexed deflection.		---	---	---
. Read back, DEFLECTION, SEVEN ZERO LEFT.		---	---	---

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Indexed elevation reading on elevation quadrant.	___	___	___
. Elevated or depressed main gun to indexed elevation (levels bubble in elevation quadrant).	___	___	___
. Read back ONE SIX HUNDRED, QUADRANT PLUS SIX.	___	___	___
. Indexed HEAT into ballistic computer.	___	___	___
. Announced HEAT INDEXED.	___	___	___
(NOTE: At the start of the RCLDF engagement a round of HEP is in the chamber and HEP is indexed in the ballistic computer).			
(NOTE: Target is illuminated).			
. Placed IR switch in 24V position.	___	___	___
. Rotated light source control for desired reticle brightness.	___	___	___
. Rotated focusing ring until target appears sharp.	___	___	___
. Identified target and announced IDENTIFIED within 14 seconds of beginning of fire command.	___	___	___
. Laid crosshair at center of base of target.	___	___	___
. Made final precise lay.	___	___	___
. Announced ON THE WAY.	___	___	___
(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)			
. Fired main gun within 17 seconds of beginning of fire command.	___	___	___
. Announced TARGET, CEASE FIRE.	___	___	___
. Identified second targets within 3 seconds of announcing TARGET, CEASE FIRE.	___	___	___
. Laid crosshair at center of base of target.	___	___	___
. Made final precise lay.	___	___	___
. Announced ON THE WAY.	___	___	___
(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)			
. Fired main gun within 6 seconds of announcing TARGET, CEASE FIRE.	___	___	___
. Announced TARGET, CEASE FIRE.	___	___	___
11. COAX ENGAGEMENT, AT THE HALT, ONE STATIONARY TARGET, COAX, GUNNER MASKED, PASSIVE/IR (1 INFANTRY SQUAD)			
After "TC" announced GUNNER, COAX:			
. Turned coax switch ON.	___	___	___
After "TC" announced target description:			
. Identified target and announced IDENTIFIED within 3 seconds.	___	___	___
. Laid infinity sight circle on near edge of target.	___	___	___

Yes No NA

After "TC" announced FIRE AND ADJUST, CALIBER FIFTY:

- . Announced ON THE WAY. \_\_\_\_\_
- (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)
- . Fired coax within 10 seconds of beginning of fire command. \_\_\_\_\_
- . Traversed and elevated coax for area coverage. \_\_\_\_\_
- . Announced TARGET, CEASE FIRE. \_\_\_\_\_

12. MAIN GUN BATTLESIGHT ENGAGEMENT, AT THE HALT, ONE STATIONARY TARGET AND ONE MOVING TARGET, SABOT, FLARE (2 TANKS)

After "TC" announces GUNNER, BATTLESIGHT:

- . Turned main gun switch ON. \_\_\_\_\_
- . Indexed SABOT into ballistic computer. \_\_\_\_\_

After "TC" announced target description:

- . Identified target and announced IDENTIFIED within 3 seconds. \_\_\_\_\_
- . Laid crosshair at center of base of target. \_\_\_\_\_

After "TC" announced FIRE:

- . Announced ON THE WAY. \_\_\_\_\_
- (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE,)
- . Fired main gun within 7 seconds of beginning of fire command. \_\_\_\_\_

After "TC" announced TARGET, MOVING TANK:

- . Identified target and announced IDENTIFIED within 3 seconds of second fire command. \_\_\_\_\_
- . Applied one half lead (2 1/2 mils) in direction of target apparent motion. \_\_\_\_\_
- . Laid leadline at center of target base. \_\_\_\_\_

After "TC" announced FIRE:

- . Announced ON THE WAY. \_\_\_\_\_
- (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)
- . Fired main gun within 7 seconds of beginning of second fire command. \_\_\_\_\_
- . Continued to track target. \_\_\_\_\_

- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| 13. APPLY IMMEDIATE ACTION IN CASE OF MAIN GUN FAILURE TO FIRE  |            |           |           |
| After "TC" tells Gunner that round failed to fire:  |            |           |           |
| . Announced MISFIRE.  | ___        | ___       | ___       |
| . Announced ON THE WAY and attempted to fire by depressing a firing trigger on the Gunner's power control handle that was not used to fire the round initially.<br>(NOTE: "TC" tells Gunner that round failed to fire.) | ___        | ___       | ___       |
| . Announced MISFIRE if gun again fails to fire.   | ___        | ___       | ___       |
| . Announced ON THE WAY and attempted to fire by depressing the firing trigger on the Gunner's manual control handle.<br>(NOTE: "TC" tells Gunner that round failed to fire.)  | ___        | ___       | ___       |
| . Announced MISFIRE if gun again fails to fire.   | ___        | ___       | ___       |
| . Turned main gun switch OFF.   | ___        | ___       | ___       |
| . Announced ON THE WAY and attempted to fire with the EMERGENCY FIRING DEVICE.<br>(NOTE: "TC" tells Gunner that round failed to fire.)  | ___        | ___       | ___       |
| . Announced MISFIRE if gun again fails to fire.   | ___        | ___       | ___       |
| . Waited two minutes and directed Loader to rotate the round 1/2 turn.  | ___        | ___       | ___       |
| After "Loader" announced UP:  |            |           |           |
| . Turned main gun switch ON.  | ___        | ___       | ___       |
| . Announced ON THE WAY and attempted to fire by depressing one of the electrical firing triggers.<br>(NOTE: "TC" tells Gunner that round failed to fire.)   | ___        | ___       | ___       |
| 14. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, ONE STATIONARY TARGET (1 TANK) <u>APPLY BOT</u>  |            |           |           |
| After Gunner has fired:   |            |           |           |
| . Relays to maintain correct initial sight picture.<br>(Notes point of sight reticle where tracer appears in relation to target.)   | ___        | ___       | ___       |
| . Announces OVER-RIGHT-BOT (or other appropriate sensing).  | ___        | ___       | ___       |
| . Moves imaged tracer point on reticle, by gun controls, to center of mass of target.   | ___        | ___       | ___       |
| . Announces ON THE WAY.<br>(NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)  | ___        | ___       | ___       |

Yes No NA

15. MAIN GUN BATTLESIGHT ENGAGEMENT MOVING TO A HALT,  
ONE STATIONARY TANK TARGET (1 TANK) APPLY TARGET  
FORM

After Gunner has fired, and "TC" has announced "OVER-DROP  
ONE HALF FORM-FIRE:

- . Moves sight reticle down by gun controls half the  
distance of the visible height of the target  
vehicle.
- . Announces ON THE WAY.
- (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)

\_\_\_\_\_  
\_\_\_\_\_

16. MAIN GUN PRECISION ENGAGEMENT MOVING TO A HALT,  
ONE STATIONARY TARGET (1 TANK) APPLY STANDARD  
ADJUSTMENT

After Gunner has fired and announced OVER:

- . Moves sight reticle down 1 mil by gun controls.
- . Announced ON THE WAY.
- (NOTE: "TC" (scorer) VERIFIES SIGHT PICTURE.)

\_\_\_\_\_  
\_\_\_\_\_

17. LAY TELESCOPE RETICLE ON TARGET PROPERLY

(NOTE: "TC" informs Gunner that the Gunner's primary  
sight is inoperative.)

After "TC" announced GUNNER, HEAT:

- . Turned main gun switch ON.
- . Checked that HEAT reticle was positioned in  
Gunner's telescope.

\_\_\_\_\_  
\_\_\_\_\_

After "TC" announced TANK, ONE EIGHT HUNDRED:

- . Identified target and announced IDENTIFIED within  
3 seconds.
- . Laid 1800 meter range line of telescope at center  
of mass of target.
- . Made final precise lay.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

After "TC" announced FIRE:

- . Announced ON THE WAY.
- (NOTE: "TC"(scorer) VERIFIES SIGHT PICTURE.)
- . Fired main gun within 7 seconds of beginning of  
fire command.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SCORING.

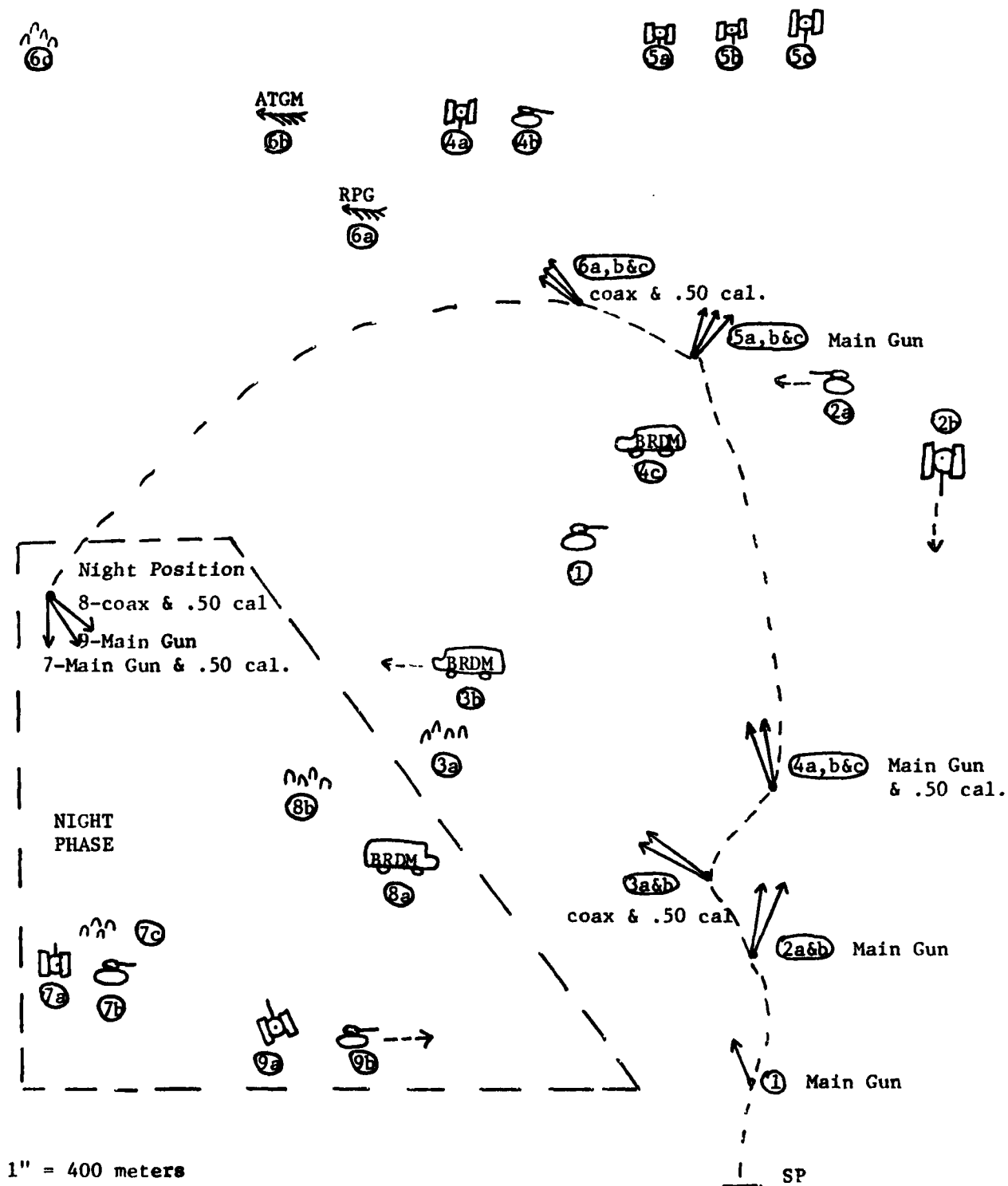
To pass, Gunner must have:

- a. Detected and reported all targets that  
Delay in detection is not cause for failure.
- b. Responded without hesitation to each applicable element of  
each fire command.
- c. Taken up correct sight picture for each target as indicated  
by fire command.
- d. Continued to monitor sight picture after firing.
- e. Met all time requirements.
- f. Been checked "Yes" or "NA" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

"DRY" TANK CREW QUALIFICATION COURSE  
(Gunner and TC Dry TCQC)

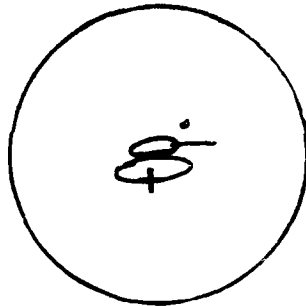




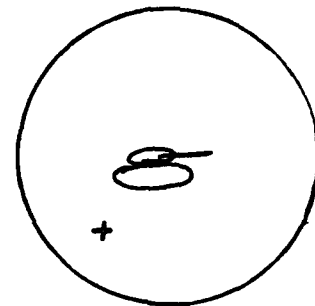
SECOND ROUND ADJUSTMENT TARGETS  
(BOT, TF and Standard Adjustment)

BOT TARGET

Initial Sight Picture  
(Battlesight)

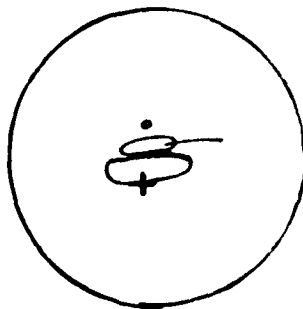


Subsequent Sight Picture  
(Battlesight)

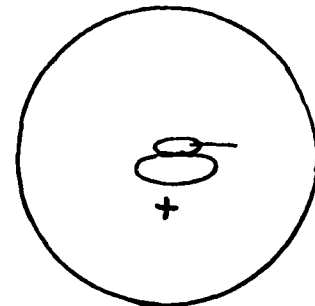


TF TARGET

Initial Sight Picture  
(Battlesight)

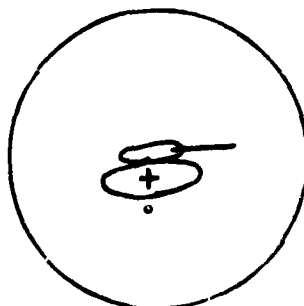


Subsequent Sight Picture  
(Battlesight)

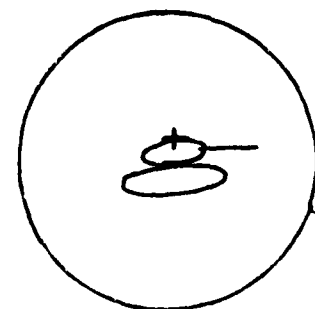


STANDARD ADJUSTMENT

Initial Sight Picture  
(Precision)



Subsequent Sight Picture  
(Precision)



**APPENDIX D**

**TANK COMMANDER'S READINESS TEST**

## TANK COMMANDER'S READINESS TEST

REQUIRED TIME: 11 hours

CROSS TRAINING: Tank Crew Gunnery Skills Test (TCGST), FM 17-12-2 are indicated by an \*. Cross training tasks are indicated by a # symbol.

### PART A. WEAPONS MAINTENANCE (W)

Type: Written pre-tests for TEC Lessons:

020-171-1132-F (Cleaning, Inspection, and Lubrication Coax)

020-171-1133-F (Troubleshooting Coax)

020-171-5229-F (Troubleshooting M85 Machinegun)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

### PART B. WEAPONS MAINTENANCE (HO)

Type: Hands-On

Time: 1 hour

Location: Company Area or UTS

Support: Tank with dummy rounds and TC Scorer

Scoring: 100% correct

### PART C. BEFORE-OPERATIONS PROCEDURES (HO)

Type: Hands-On

Time: 3/4 hour

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

**PART D. WEAPON SYSTEMS PREPARATION (W)**

Type: Written pre-tests for TEC Lessons:

- 020-171-5340-F (Rangefinder, Part 1)
- 020-171-5343-F (Operation of Xenon Searchlight, M60/M60A1)
- 020-171-5352-F (Boresighting the Machinegun, M60/M60A1)
- 020-171-5353-F (Zeroing the Main Gun and Machineguns and  
Setting Battlesights)
- 020-171-5354-F (Boresighting the Xenon Searchlight, M60/M60A1)
- 020-171-5355-F (Boresighting the Main Gun, RF, Telescope/Peri,  
Part 2)
- 020-171-5341-F (Preparing the Ballistic Computer for Operation)
- 020-171-5351-F (Boresighting the Main Gun, RF, Telescope/Peri,  
Part 1)
- 020-171-5337-F (Auxiliary Fire Control Instruments, Part 2)

Time: 1 1/4 hours

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

**PART E. WEAPON SYSTEMS PREPARATION (HO)**

Type: Hands-On

Time: 1 1/4 hours

Location: Company Area or UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART F. COMBAT LOADING (W)

Type: Written pre-tests for TEC Lessons:

020-171-5331-F (Tank Ammo: Selecting Ammunition)  
020-171-5332-F (Tank Ammo: Handling, Main Gun)  
020-171-5346-F (105MM Gun: Loading)  
020-171-5347-F (105MM Gun: Misfire Procedures)  
020-171-5348-F (105MM Gun: Unloading)

Time: 3/4 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART G. COMBAT LOADING (HO)

Type: Hands-On

Time: 1 1/4 hours

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 100% correct

PART H. TARGET ACQUISITION (W)

Type: Written pre-tests for TEC Lessons:

020-171-1611-F (Target Range Determination)  
020-171-1612-F (Locating and Reporting Targets)  
020-171-1614-F (Target Acquisition Scoring Techniques)  
935-171-0203-F (Armor Vehicle Recognition)

Time: 1 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART I. LOCATING AND REPORTING TARGETS (HO)

Type: Hands-On

Time: 3/4 hour

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

PART J. TACTICAL OPERATIONS (W)

Type: Written pre-tests for TEC Lessons:

020-171-5361-F (Initial Fire Commands, M60/M60A1/M60A3 Tank)

020-171-5364-F (Machinegun Engagements, M60/M60A1/M60A3 Tank)

Time: 1/2 hour

Location: Company Area or UTS

Support: Test Administrator/Scorer

Scoring: 90% correct

PART K. TACTICAL OPERATIONS (HO)

Type: Hands-On

Time: 2 hours

Location: UTS

Support: Tank and TC Scorer

Scoring: 100% correct

## TANK COMMANDER'S READINESS TEST

### PART A. WEAPONS MAINTENANCE (W)

**CONDITIONS.** Tank Commander is in a classroom and is administered pre-tests 020-171-1132-F, 020-171-1133-F, and 020-171-5229-F.

**INSTRUCTIONS TO TANK COMMANDER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of three parts: Cleaning, Inspection, and Lubrication Coax (020-171-1132-F), Troubleshooting Coax (020-171-1133-F), and Troubleshooting M85 Machinegun (020-171-5229-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

### TASKS.

Explain correct method of cleaning coax backplate assembly.  
Identify various compounds for cleaning coax barrel.  
Identify coax unserviceable parts.  
Identify various lubricants to use on coax.  
Identify coax parts that should be free of lubricants.  
Identify coax parts that are lubricated just prior to firing.  
Explain "TC's" action (in Loader's position) upon hearing STOPPAGE announced first time and second time with a hot and cold coax.  
Explain "TC's" action (in Loader's position) upon hearing STOPPAGE announced second time with a hot coax, and coax cannot be cleared quickly.  
Explain "TC's" action (in Loader's position) if coax has a ruptured cartridge and the stoppage must be corrected quickly.  
Explain "TC's" action upon initial stoppage of M85.  
Explain "TC's" action when hot M85 fails to fire and immediate action has failed and a round remains in the chamber.  
Explain "TC's" action when a cold M85 fails to fire after two attempts.  
Explain "TC's" action if M85 has a ruptured cartridge and there is a spare barrel.  
Explain "TC's" action after M85 extractor has been driven through the ruptured cartridge.

NOTES.

- a. See Module TC-1 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.



## TANK COMMANDER'S READINESS TEST

### PART A: WEAPONS MAINTENANCE

The Test Proctor will administer the following TEC Lesson pre-tests and the Tank Commander will answer only those questions so indicated:

- . Cleaning, Inspection, and Lubrication Coax (020-171-1132-F)
  - Tank Commander will answer all questions.
- . Troubleshooting Coax (020-171-1133-F)
  - Tank Commander will answer all questions.
- . Troubleshooting M85 Machinegun (020-171-5229-F)
  - Tank Commander will answer all questions.

TANK COMMANDER'S READINESS TEST

PART A: WEAPONS MAINTENANCE

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and  
020-171-5229-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1132-F

1.

2.a.

b.

c.

3.a.

b.

c.

4.

5.

6.

7.

8.

020-171-1133-F

1.

2.

3.

4.

5.

020-171-5229-F

1.

2.

3.

4.

5.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

TANK COMMANDER'S READINESS TEST

PART A. WEAPONS MAINTENANCE

PRE-TEST ANSWER KEY

TEC Lessons 020-171-1132-F,  
020-171-1133-F, and  
020-171-5229-F

ANSWER KEY

M73/M219 MACHINEGUN: CLEANING, INSPECTION, AND LUBRICATION  
(020-171-1132-F)

1. Wipe it off with a clean, dry cloth.
- 2.a. Solvent (SD)
  - b. RBC
  - c. RBC
- 3.a. (Barrel cracked)
  - b. (Camway burned)
  - c. (Guide rod is bent)
- 4.c. (LSA)
- 5.e. (LAW)
- 6.b. (PL Special)
- 7.a. (The barrel)
8. Both

TROUBLESHOOTING THE COAX  
(020-171-1133-F)

1. A
2. B
3. A
4. C
5. Change the barrel.

TROUBLESHOOTING THE M85 MACHINEGUN  
(020-171-5229-F)

1. Wait five seconds, charge gun, attempt to fire (or equivalent answer).
2. Wait five minutes (or equivalent answer).
3. Wait five seconds, clear gun, hand function, reload and attempt to fire (or equivalent answer).
- 4.c. Insert extractor into bolt, fire manually.
- 5.b. Pull the charger handle back so that the extractor and cartridge are just clear of the chamber.

SCORING KEY.

Award 5 points for each correct response (110 points possible).

PASSING SCORE = 100 points.

## TANK COMMANDER'S READINESS TEST

### PART B. WEAPONS MAINTENANCE (HO)

**CONDITIONS.** An M60A1 tank with coax and .50 caliber machinegun mounted and a complete gun-tool roll stowed according to unit loading plan.

**INSTRUCTIONS TO TANK COMMANDER.** "This test is in three parts. In the first part you are to remove the coax from the tank, disassemble and assemble it, and remount the coax in the tank. In the second part you will do the same for the M85. In the third part you will remove, disassemble, assemble, and install the breechblock. You will have 3 minutes for disassembly and 3 minutes for assembly of each machinegun, and 6 minutes for removal and disassembly of the breechblock and 6 minutes for assembly and installation of the breechblock. I will alert you before I start timing on each of these tasks. I will not assist you during the test. . . Do you have any questions? Work quickly, but carefully . . . Ready? . . . Begin."

#### TASKS.

- Remove the coax from a tank.
- #\*Disassemble the coax.
- Inspect the coax.
- #\*Assemble the coax.
- Check operation of the coax.
- Mount the coax in a tank.
- Remove the M85 from a tank.
- \*Disassemble the M85.
- Inspect the M85.
- \*Assemble the M85.
- Check operation of the M85.
- Mount the M85 in a tank.
- #\*Disassemble the main gun breechblock.
- #\*Assemble the main gun breechblock.

#### NOTES.

- a. Tank Commander should not be given this task until he has passed Tank Commander's Readiness Test, Part A.
- b. Remedial training of tasks failed should be provided on the spot, but after the Tank Commander has completed all of Part B. See Module TC-2 for remedial training.

- c. All performance measures and steps within each task must be performed in the order given.
- d. Cross training tasks are indicated by a # symbol.
- e. Estimated time, 1 hour.

PERFORMANCE MEASURES.

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. REMOVE THE COAX FROM A TANK			
. Disconnected electrical lead from solenoid.	___	___	___
. Loosened three support set screws in collar on gun mount cover shield.	___	___	___
. Removed machinegun retainer.	___	___	___
. Removed machinegun.	___	___	___
. Removed spent cartridge bag.	___	___	___
. Removed case ejection shield.	___	___	___
2. DISASSEMBLE THE COAX (3 minutes)			
. Removed barrel and jacket assembly from receiver.	___	___	___
. Separated barrel from jacket assembly.	___	___	___
. Removed cover assembly.	___	___	___
. Removed feed tray.	___	___	___
. Removed guide rod springs while holding barrel extension forward.	___	___	___
. Separated guide rods from guide rod springs.	___	___	___
. Removed backplate assembly.	___	___	___
. Retracted barrel assembly.	___	___	___
. Depressed buffer support lever and removed barrel extension.	___	___	___
. Removed breechblock from barrel extension assembly.	___	___	___
. Removed retainer clip and charger assembly from projecting stud.	___	___	___
3. INSPECT THE COAX			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust, and foreign matter.	___	___	___
. Checked all moving parts for looseness, binding wear, or damage.	___	___	___
4. ASSEMBLE THE COAX (3 minutes)			
. Installed charger assembly.	___	___	___
. Placed breechblock assembly in barrel extension.	___	___	___
. Installed barrel extension.	___	___	___
. Installed backplate assembly.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Joined guide rods and guide rod springs.	___	___	___
. Installed feed tray.	___	___	___
. Installed cover assembly.	___	___	___
. Joined barrel to jacket assembly.	___	___	___
. Joined barrel and jacket assembly with receiver.	___	___	___
<b>5. CHECK OPERATION OF THE COAX</b>			
. Placed safety in FIRE position.	___	___	___
. Charged weapon to lock moving parts to rear.	___	___	___
. Allowed barrel extension to ease forward by keeping tension on charging handle and depressing manual firing trigger.	___	___	___
<b>6. MOUNT THE COAX IN A TANK</b>			
. Physically examined gun mount cover shield to see that three support set screws were backed off flush with collar of gun port.	___	___	___
. If set screws were not flush with collar of gun port, unscrewed set screws so that flash suppressor of machinegun did not hit set screws when inserted through machinegun port.	___	___	___
. Had the Gunner, if necessary, depress the gun tube so that it was horizontal or slightly below.	___	___	___
. Placed the shell ejection shield on the shield support and fastened six snap fasteners which hold it in place.	___	___	___
. Installed spent cartridge bag on empty cartridge bag support by fastening eight snap fasteners which hold it in place.	___	___	___
. Slid machinegun into machinegun port until rearmost portion of jacket assembly (disconnecter holes) were flush with machinegun bracket assembly.	___	___	___
. Placed machinegun retainer over rearmost position of jacket assembly, alining it with machinegun bracket assembly.	___	___	___
. Inserted two cap screws and lock washers in their respective holes and tightened them down.	___	___	___
. Plugged in machinegun electrical lead to solenoid on machinegun's backplate assembly.	___	___	___
<b>7. REMOVE THE M85 FROM A TANK</b>			
. Cleared the weapon and left safety in SAFE (S).	___	___	___
. Removed the M36 periscope.	___	___	___
. Disconnected the solenoid lead connector from the backplate assembly.	___	___	___



	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Opened cradle access doors and removed barrel.	___	___	___
. Manually elevated cradle 20°.	___	___	___
. Removed rear mounting pin and slid machinegun out of cradle.	___	___	___
. Passed machinegun out of turret through cupola hatch.	___	___	___
. Replaced rear mounting pin in cradle.	___	___	___
. Replaced M36 periscope.	___	___	___
<b>8. DISASSEMBLE THE M85 (3 minutes)</b>			
. Cleared weapon.	___	___	___
. Removed barrel.	___	___	___
. Removed backplate group.	___	___	___
. Disengaged retainer lug of guide rod.	___	___	___
. Removed bolt buffer group.	___	___	___
. Separated helical spring, buffer sleeve, and spring and guide rod.	___	___	___
. Removed feed and ejector assembly.	___	___	___
. Removed sear assembly.	___	___	___
. Removed barrel extension and bolt assembly.	___	___	___
. Separated bolt assembly from barrel extension.	___	___	___
. Removed hand charger assembly.	___	___	___
. Removed accelerator quick release pin.	___	___	___
. Removed cover assembly and feed tray assembly.	___	___	___
. Separated cover assembly from feed tray assembly.	___	___	___
. Removed accelerator assembly.	___	___	___
<b>9. INSPECT THE M85</b>			
. Checked all metal surfaces for bulges, cracks, burrs, corrosion, rust, and foreign matter.	___	___	___
. Checked all moving parts for looseness, binding, wear, or damage.	___	___	___
<b>10. ASSEMBLE THE M85 (3 minutes)</b>			
. Installed accelerator assembly.	___	___	___
. Replaced cover assembly on feed tray assembly.	___	___	___
. Installed cover assembly and feed tray assembly.	___	___	___
. Installed accelerator quick release pin.	___	___	___
. Installed hand charger assembly.	___	___	___
. Assembled bolt assembly and barrel extension.	___	___	___
. Replaced sear assembly.	___	___	___
. Replaced feed and ejector assembly.	___	___	___
. Assembled helical spring, buffer sleeve and spring, and guide rod.	___	___	___
. Installed bolt buffer group.	___	___	___
. Engaged retainer lug or guide rod.	___	___	___
. Installed the barrel.	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
11. CHECK OPERATION OF THE M85			
. Placed safety in FIRE (F).	—	—	—
. Charged weapon to lock moving parts to the rear.	—	—	—
. Kept tension on charger handle and pulled trigger extension handle, depressing trigger to allow bolt assembly to close slowly.	—	—	—
12. MOUNT THE M85 IN A TANK			
. Removed machinegun barrel from the receiver.	—	—	—
. Removed M36 periscope body.	—	—	—
. Removed machinegun rear mounting pin.	—	—	—
. Manually elevated cradle 20°.	—	—	—
. Lowered machinegun receiver into turret through cupola hatch.	—	—	—
. Positioned machinegun into cradle and secured rear mounting pin.	—	—	—
. Opened cradle access doors and installed barrel.	—	—	—
. Connected solenoid lead to backplate assembly.	—	—	—
. Normally depressed cradle to horizontal position.	—	—	—
. Replaced M36 periscope body in mount.	—	—	—
13. DISASSEMBLE THE MAIN GUN BREECHBLOCK ( <u>6 minutes</u> )			
a. Removal			
. Insured that main gun safety switch was in SAFE position.	—	—	—
. Insured that breechblock crank stop was in rear position.	—	—	—
. Opened breech.	—	—	—
. Insured chamber was empty.	—	—	—
. Closed breech manually by tripping extractors with an empty cartridge case or a wooden block.	—	—	—
. Removed firing pin spring by depressing plunger, moving plunger to right, twisting firing pin spring retainer counterclockwise until lug alined with groove in breechblock, and removing retainer and spring.	—	—	—
. Removed firing pin and retractor guide with firing pin retractor by inserting screwdriver blade into retractor guide slot and prying outward.	—	—	—
. Screwed eye bolt into top of breechblock.	—	—	—
. Suspended chain hoist from hook on turret ceiling and connected chain hoist to eye bolt.	—	—	—
. Took up slack with chain hoist to support breechblock.	—	—	—
. Applied tension on closing spring by turning adjuster clockwise with spanner wrench.	—	—	—

Yes No NA

- . Removed tension from closing spring by depressing plunger from its notch with a screwdriver and allowing adjuster to turn counterclockwise under control of spanner wrench. \_\_\_ \_\_\_ \_\_\_
- . Inserted small screwdriver into hole in breechblock crank stop and slid stop forward. \_\_\_ \_\_\_ \_\_\_
- . Started breechblock downward by rotating operating handle rearward and down, and with chain hoist let breechblock begin descending. \_\_\_ \_\_\_ \_\_\_
- . Returned operating handle to latched position. \_\_\_ \_\_\_ \_\_\_
- . Lowered breechblock until breechblock crank pivot was free of the T-slot, and removed pivot. \_\_\_ \_\_\_ \_\_\_
- . Lowered breechblock until breechblock was on turret floor. \_\_\_ \_\_\_ \_\_\_
- . Released chain hoist from eye bolt. \_\_\_ \_\_\_ \_\_\_
- . Removed right and left extractors from breech ring. \_\_\_ \_\_\_ \_\_\_

b. Disassembly

- . Depressed firing contact plate plunger and turned firing contact plate counterclockwise until arrows on plate and breechblock were aligned with each other. \_\_\_ \_\_\_ \_\_\_
- . Removed firing contact plate, firing contact plate plunger, and spring. \_\_\_ \_\_\_ \_\_\_
- . Removed plastic washer, firing contact, and firing contact sleeve. \_\_\_ \_\_\_ \_\_\_
- . Removed retractor pivot pin and firing pin retractor from retractor guide. \_\_\_ \_\_\_ \_\_\_
- . Removed screw, washers, and clamp securing retractor driver to bottom of breechblock. (Used Allen wrench to remove screws.) \_\_\_ \_\_\_ \_\_\_
- . Removed retractor driver, retractor driver shaft, and spring. \_\_\_ \_\_\_ \_\_\_

14. ASSEMBLE MAIN GUN BREECHBLOCK (6 minutes)

a. Assembly

- . Installed retractor driver spring, shaft, and retractor driver into bottom of the breechblock. \_\_\_ \_\_\_ \_\_\_
- . Affixed retractor group to bottom of breechblock by installing securing clamp, washers, and screw with Allen wrench. \_\_\_ \_\_\_ \_\_\_
- . Inserted firing contact sleeve, firing contact, plastic washer, spring, and firing contact plate plunger into breechblock. \_\_\_ \_\_\_ \_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Installed firing pin retractor into retractor guide and secured it with retractor pivot pin.	—	—	—
. Replaced firing contact plate by alining arrow and depressing and rotating plate clockwise until firing contact plate plunger engaged locking notch in plate.	—	—	—
<b>b. Installation</b>			
. Installed right and left extractors into extractor pivots in the breech ring.	—	—	—
. Inserted chain hoist into eye bolt on breechblock.	—	—	—
. Raised breechblock and guided it into breech ring until breechblock came in contact with extractor plungers.	—	—	—
. Depressed plungers and moved breechblock upward.	—	—	—
. Installed breechblock crank pivots in breechblock crank.	—	—	—
. Inserted pivot in breechblock T-slot.	—	—	—
. Tripped extractors with the screwdriver and raised the breechblock to the closed position.	—	—	—
. Inserted small screwdriver or rod into the hole in breechblock crank stop and slid stop to rear position.	—	—	—
. Jiggled crank stop back and forth to assure that plunger was seated in its recess.	—	—	—
. Released tension on the chain hoist.	—	—	—
. Turned adjuster clockwise until plunger entered first recess.	—	—	—
. Removed chain hoist and eye bolt.	—	—	—
. Installed retractor guide with firing pin retractor and firing pin in its well by pushing guide forward until it was flush with inner surface of well.	—	—	—
. Installed firing pin spring and firing pin spring retainer.	—	—	—
. Depressed plunger, and twisted retainer clockwise until plunger was seated in its recess.	—	—	—
. Opened and closed breech several times to test for binding or shock.	—	—	—
. Adjusted tension on the closing spring to contact any binding or shock in breech operation.	—	—	—

SCORING.

To pass, Tank Commander must have:

- a. Checked operation of the coax and M85 machinegun (without being told) after assembling them.
- b. Completed disassembly and assembly of the coax and M85 machinegun and the breechblock within time specified.
- c. Been checked "Yes" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART C. BEFORE-OPERATIONS PROCEDURES (HO)

CONDITIONS. Fully operational M60A1 with BII.

INSTRUCTIONS TO TANK COMMANDER. "Your unit is going on a tactical mission in an NBC environment. In one hour your vehicle will move to the firing range to boresight and zero. You will be scored on what you do during this hour as well as how well you do it. Do only those tasks which involve you actively. You do not have to supervise the members of your crew. I will observe your performance and serve as the other crew members as needed. When the hour is over, proceed to the firing range."

#### TASKS.

- Operate tank intercommunications system.
- #\*Place the turret into power operation.
- \*Perform main gun prepare-to-fire procedures.
- Check operation of M3 heater.

#### NOTES.

- a. The scorer must not give the TC any more information than he would have on the job. One goal of the Tank Commander's Readiness Test is to determine whether the TC can ready himself and his crew for a combat mission with a minimum of supervision.
- b. Remedial training on tasks failed should be provided on the spot, but after TC has completed all of Part C. See Module TC-3 for remedial training.
- c. In the Performance Measures section which follows, the role of the scorer as Gunner or Loader is indicated by "Gunner" or "Loader". The scorer, acting as either, should perform as indicated.
- d. The role of the TC as supervisor of the crew is not addressed in this test. To do so, add to the instructions that no before-operations checks have been performed by any crew member and that you will perform as the other crew members as directed. Delete remarks concerning supervision.
- e. All performance measures and steps within each task must be performed in the order given.
- f. Cross training tasks are indicated by a # symbol.
- g. Estimated time, 3/4 hour.

# PERFORMANCE MEASURES.

## 1. OPERATE TANK INTERCOMMUNICATIONS SYSTEM.

Yes No NA

- . Adjusted CVC helmet to head. \_\_\_
- . Insured CVC helmet radio-interphone switch was in center position. \_\_\_
- . Connected interphone connector to plug at left bottom of control box. \_\_\_
- . Connected radio audio connector plug at right bottom of control box. \_\_\_
- . Placed control box monitor switch in either the ALL, A, INT ONLY, or B position \_\_\_
- . Transmitted to TC (Scorer) TANK COMMANDER READY. \_\_\_

## 2. PLACE TURRET INTO POWER OPERATION

(TC as Gunner)

- . Performed zero pressure check to insure accumulator charge of 450-500 psi. \_\_\_
- . Checked hydraulic power pack oil level. \_\_\_
- . Insured the tank and surrounding area are clear of obstruction. \_\_\_
- . Insured crew is in safe position and Driver has lowered his seat and has his head down. \_\_\_
- . Instructed Loader to release gun tube from travel lock. \_\_\_
- . Unlocked turret lock. \_\_\_
- . Announced POWER to alert the crew. \_\_\_
- . Checked that engine is running and set at 800 to 900 rpm. \_\_\_
- . Insured manual traversing handle locking lever is in the detent position. \_\_\_
- . Turned turret power switch ON. \_\_\_
- . Insured that hydraulic pressure was between 1225 and 1275 psi before-operation controls. \_\_\_
- . Squeezed magnetic brake switch and rotated Gunner's control handle to traverse turret. \_\_\_
- . Rotated handles rearward and forward to elevate and depress gun. \_\_\_
- . Checked magnetic brake. \_\_\_
- . Rechecked oil in turret control system. \_\_\_

(TC as TC)

(Note: After TC as Gunner has completed the above steps, the TC completes the following steps.)

- . Squeezed Commander's override and magnetic brake actuator to assume control from Gunner. \_\_\_
- . Rotated Commander's power control handle to traverse turret. \_\_\_

Yes No NA

- . Rotated Commander's power control handle rearward and forward to elevate and depress gun.

\_\_\_\_\_

### 3. PERFORM MAIN GUN PREPARE-TO-FIRE PROCEDURES

- . Commanded PREPARE TO FIRE after "Commer" placed turret into power operation.
- . Disconnected breakaway plug.
- . Cleaned exterior lens and vision devices on turret.
- . Checked operation of shield on periscope.
- . Checked instrument lights.
- . Commanded CHECK FIRING SWITCHES.
- . Checked firing trigger on power control handle when main gun switch is ON.
- . Checked firing trigger on power control handle when coaxial machinegun switch is ON.
- . Commanded CHECK GUN CONTROLS.
- . Checked Commander's power control handle for power elevation and power traverse.
- . Commanded CHECK FIRING CONTROLS.
- . Turned cupola power switch ON.
- . Checked operation of .50 caliber machinegun mount and controls.
- . Checked for binding on rangefinder.
- . Turned ballistic computer on.
- . Indexed various ranges on rangefinder.
- . Told "Commer" to ensure they are indexed on ballistic computer.
- . Commanded REPORT.

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### 4. CHECK OPERATION OF M3 HEATER

On Driver's request, CHECK GAS PARTICULATE UNIT:

- . Rotated air heater knob to ON and checked for indicator lamp operation.
- . Checked air flow through hose.
- . Allowed air to warm up for at least five minutes.
- . Checked air temperature.
- . Adjusted protective mask and attached air hose.
- . Removed and stowed air hose and protective mask.
- . Rotated air heater switch to OFF and listened for audible click.
- . Reported deficiencies to Driver for entry on DA Form 2404 if required.

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SCORING.

To pass, the Tank Commander must have:

- a. Been checked "Yes" or "NA" on all performance measures.
- b. Initiated performance on all tasks without cueing by scorer.
- c. If a task step does not apply to this situation, i.e., no deficiencies to report on M3 heater, score the step "NA."

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART D. WEAPON SYSTEMS PREPARATION (W)

**CONDITIONS.** The Tank Commander is in a classroom and is administered TEC pre-tests 020-171-5337-F, 020-171-5340-F, 020-171-5341-F, 020-171-5343-F, and 020-171-5351-F through 020-171-5355-F.

**INSTRUCTIONS TO TANK COMMANDER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of nine parts: Rangefinder Familiarization, Part 1 (020-171-5340-F); Preparing the Ballistic Computer for Operation (020-171-5341-F); Operation of the Xenon Searchlight, M60/M60A1, (020-171-5343-F); Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1, Part 1 (020-171-5351-F); Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1, Part 2 (020-171-5355-F); Boresighting the Machinegun, M60/M60A1 (020-171-5352-F); Boresighting the Xenon Searchlight, M60/M60A1 (020-171-5354-F); and Zeroing the Main Gun and Machinegun and Setting Battlesights (020-171-5353-F); and Auxiliary Fire Control Instruments [Exclusive of Azimuth Indicator], Part 2 (020-171-5337). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

- Identify various rangefinder controls.
- Explain use of various rangefinder controls.
- Explain procedure for placing the ballistic computer into operation.
- Explain safety precautions for operating Xenon searchlight.
- Explain procedure for operating the Xenon searchlight in various modes.
- Explain use of OVERDRIVE mode.
- Explain procedure for placing cross threads over end of muzzle for boresighting.
- Explain three characteristics of a good main gun boresight target.
- Explain procedure for removing firing pin components from main gun.
- Explain procedure for alining the black main gun-laying reticle of the rangefinder onto the boresight target.
- Explain procedure for alining auxiliary gun-laying reticle with the main gun-laying reticle.
- Identify the point on the HEP/SABOT telescope sight reticle that is used to aline the reticle on the boresight target.
- Explain the procedure for alining the HEP/SABOT telescope reticle on the boresight panel.

Identify correct deflection and elevation slip scale settings for the Gunner's telescope and periscope.  
List three characteristics of a good coax boresight target.  
Indicate correct actions to take before removing coax receiver.  
Explain action to be taken on solenoid wire and protective shield prior to removing the coax receiver.  
Explain reason for alining the main gun with boresight target prior to boresighting the coax.  
Explain steps to aline the coax and infinity sight with main gun alinement on boresight panel.  
List M85 machinegun parts that must be removed prior to boresighting.  
Indicate sequence for removing M85 machinegun parts prior to boresighting.  
Identify M85 machinegun parts.  
Explain procedure for boresighting the M85 machinegun.  
Indicate tank to target range for boresighting the M85 machinegun.  
Indicate tank to target range for boresighting the Xenon searchlight.  
Explain primary method of boresighting the Xenon searchlight.  
Explain alternate method of boresighting the Xenon searchlight.  
Identify adjusting screws for horizontal and vertical adjustments.  
Explain procedure for zeroing the main gun.  
Explain procedure for zeroing the coax.  
Explain procedure for setting battlesights.  
Explain procedure for zeroing the elevation quadrant.

#### NOTES.

- a. See Module TC-4 for remedial training of deficiencies.
- b. Estimated time, 1 1/4 hours.

## TANK COMMANDER'S READINESS TEST

### PART D: WEAPON SYSTEMS PREPARATION

The Test Proctor will administer the following TEC Lesson pre-tests, and the Tank Commander will answer only those questions so indicated:

- . Rangefinder Familiarization, Part 1 (020-171-5340-F)
  - Tank Commander will answer all questions.
- . Preparing the Ballistic Computer for Operation (020-171-5341-F)
  - Tank Commander will answer questions 1 through 10.
- . Operation of the Xenon Searchlight, M60/M60A1 (020-171-5343-F)
  - Tank Commander will answer all questions.
- . Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1, Part 1 (020-171-5351-F)
  - Tank Commander will answer all questions.
- . Boresighting the Main Gun, Rangefinder, Tele/Peri, M60/M60A1, Part 2 (020-171-5355-F)
  - Tank Commander will answer all questions.
- . Boresighting the Machinegun, M60/M60A1 (020-171-5352-F)
  - Tank Commander will answer all questions.
- . Boresighting the Xenon Searchlight, M60/M60A1 (020-171-5354-F)
  - Tank Commander will answer all questions.
- . Zeroing the Main Gun and Machineguns and Setting Battle-sights (020-171-5353-F)
  - Tank Commander will answer questions 1, 5, 6, 7, 8, 9, 12, 13, 14, 15, and 17.
- . Auxiliary Fire Control Instruments [Exclusive of Azimuth Indicator], Part II (020-171-5337-F)
  - Tank Commander will answer questions 1 and 2.

TANK COMMANDER'S READINESS TEST

PART D: WEAPON SYSTEMS PREPARATION

TEC Lessons 020-171-5340-F,  
020-171-5341-F, 020-171-  
5343-F, 020-171-5351-F  
through 020-171-5355-F,  
020-171-5337-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5340-F

1.a.

b.

c.

2.a.

b.

3.

4.

5.

6.

7.

8.

020-171-5341-F

1.a.

b.

c.

2.a.

b.

3.a.

b.

c.

4.

5.a.

b.

c.

6.

7.a.

b.

c.

d.

e.

f.

8.a.

b.

9.

10.

020-171-5343-F

1.

2.

3.a.

b.

4.

5.

6.

7.

020-171-5351-F

1.

2.a.

b.

3.

4.a.

b.

c.

d.

5.

020-171-5355-F

1.a.

b.

c.

d.

2.a.

b.

c.

d.

3.

4.a.

b.

c.

d.

5.                    DEFL/ELE  
RANGEFINDER           /     
TELESCOPE              /     
PERISCOPE              /   

6.a.

b.

c.

7.a. DAYLIGHT --

b. DUSK --

020-171-5352-F

1.a.

b.

c.

2.a.

b.

c.

3.a.

b.

4.

5.a.

b.

c.

6.

7.



8.a.

b.

c.

d.

9.a.

b.

c.

10.a.

b.

11.

020-171-5354-F

1.

2.

3.

4.

5.

6.

7.a.

b.

8.a.

b.

9.

10.

11.

020-171-5353-F

1.a.

b.

c.

5.

6.

7.a.

b.

c.

8.

9.

12.

13.

14.

15.a.

b.

17.a.

b.

c.

d.

020-171-5337-F

1.

2.

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

TANK COMMANDER'S READINESS TEST

PART D: WEAPON SYSTEMS PREPARATION

PRE-TEST ANSWER KEY

TEC Lessons 020-171-5340-F,  
020-171-5341-F, 020-171-5343-F,  
020-171-5351-F through  
020-171-5355-F

ANSWER KEY

RANGEFINDER FAMILIARIZATION, PART 1  
(020-171-5340-F)

- 1.a. reticle switch
- b. vertical adjustment knob
- c. horizontal adjustment knob
- 2.a. number 3, called the occluder knob
- b. number 1, called the diopter knob
3. C
4. LETTER B NAME range knob
5. coincidence
6. range scale
7. R
8. real image and the ghost image

PREPARING THE BALLISTIC COMPUTER FOR OPERATION  
(020-171-5341-F)

- 1.a. C--Turn computer ON.
- b. A--Check to make sure it's ON.
- c. B--Adjust illumination of the computer dials.

- 2 .a. A
  - b. Rotate it.
- 3.a. The inner pointer will show the same range as the rangefinder range scale.
  - b. The outer pointer will aline itself with the inner pointer.
  - c. The shafts will rotate.
4. B
- 5.a. Turn the handle clockwise until it stops.
  - b. Push the handle in or pull it out to select ammunition.
  - c. Release the handle slowly.
6. C
- 7.a. Push in on the handcrank.
  - b. Check the reset light to make sure it's ON.
  - c. Rotate the handcrank (either clockwise or counterclockwise).
  - d. Check the mil counter for a change in mil reading.
  - e. Pull the handcrank out.
  - f. Press the reset button.
- 8.a. Manual mode
  - b. Electrical mode
9. Press the reset button.
10. The reset light will go out.

OPERATION OF THE XENON SEARCHLIGHT, M60/M60A1  
(020-171-5343-F)

1. A and C
2. B
- 3.a. Turn the mode selector switch to B0.
  - b. Turn the searchlight power switch to STANDBY (either order).

4. Rotate the mode selector switch to VIS FOCUS.
5. Pull out on the mode selector switch.
6. Turn the searchlight power switch to OFF.
7. Check to make sure the blower motor has stopped.

BORESIGHTING MAIN GUN, RANGEFINDER, TELE/PERI, M60/M60A1  
(020-171-5351-F)

1. A
- 2.a. B--The strings are too loose.
  - b. C--The vertical string is not properly positioned over witness mark.
3. B
- 4.a. C
  - b. A
  - c. D
  - d. B
5. A

BORESIGHTING MAIN GUN, RANGEFINDER, TELE/PERI, M60/M60A1  
(020-171-5355-F)

- 1.a. Unlock the boresight knobs using the locking levers.
  - b. Aline the reticle on the target aiming point using the boresight knobs.
  - c. Lock the boresight knobs using the locking levers.
  - d. Set the slip scales.
- 2.a. Unlock the boresight knobs using the locking levers.
  - b. Superimpose the auxiliary gun-laying reticle on main gun-laying reticle using the auxiliary boresight knobs.
  - c. Lock the boresight knobs using the locking levers.
  - d. Set the slip scales.

3. A
- 4.a. Unlock the boresight knobs using the locking levers.
- b. Aline the boresight cross of the reticle with the target aiming point using the boresight knobs.
- c. Lock the boresight knobs using the locking levers.
- d. Set the slip scales.
5. DEFL/ELE

RANGEFINDER	___/___
TELESCOPE	___/___
PERISCOPE	___/___
- 6.a. Disengage the boresight knobs.
- b. Aline the reticle with the target aiming point using the boresight knobs. Release the boresight knobs.
- c. Set the slip scales.
- 7.a. DAYLIGHT--The Gunner's periscope sight must be covered with an opaque card containing a dime-sized hole.
- b. DUSK--The target must be illuminated by white light.

**BORESIGHTING THE MACHINEGUNS**  
(020-171-5352-F)

- 1.a. Known range (as close to 1200 meters as possible)
- b. Right angles
- c. Permanent
- 2.a. safe
- b. unloaded
- c. forward
- 3.a. A--Solenoid wire being removed
- B--Protective shield being removed
- b. B, then A

4. Aline the main gun on the target aiming point.
- 5.a. Loosen the vertical mounting screws and vertically aline the coax gun bore on the target aiming point using the vertical adjusting setscrews. Retighten vertical mounting screws.
- b. Loosen the horizontal bracket mounting screws and horizontally aline the coax gun bore on the target aiming point using the horizontal adjusting setscrews. Retighten the horizontal bracket mounting screws.
- c. Adjust the infinity sight reticle with the infinity sight bore-sight knobs so that the reticle encircles the target aiming point.
6. C, F, H, J
7. J, H, F, C
- 8.a. Backplate assembly
- b. Sear assembly
- c. Bolt assembly
- d. Bolt buffer group
- 9.a. Aline the M85 gun bore on the target aiming point using the manual elevating and traversing control handles. (You also could have added that you would use the azimuth adjustment knob for a precise adjustment.)
- b. Replace M-36 periscope and, without moving the machinegun, aline the boresight cross of both the daylight and the IR reticles onto the target aiming point using the appropriate elevation and deflection boresight knobs.
- c. Set the slip scales.
- 10.a. The crewman is holding the feed actuator lever to the side.
- b. The lever must be to the side so that the view through the bore will be clear.
11. 500 meters

**BORESIGHTING THE XENON SEARCHLIGHT, M60/M60A1  
(020-171-5354-F)**

1. 1200 meters
2. Zero (00)

3. Plus 5
4. Manual elevating control handle
5. Visible focus
6. Aline the searchlight's beam on the target aiming point.
- 7.a. A and D
  - b. B and C
- 8.a. 7 feet
  - b. 16 1/2 inches
9. B
10. B
11. Realine the searchlight's beam so that the bottom of the beam's brightest spot touches the reference mark.

ZEROING THE MAIN GUN MACHINEGUNS AND SETTING BATTLESIGHTS  
(020-171-5353-F)

- 1.a. Known range (as close to 1200 meters as possible)
  - b. Right angles
  - c. Permanent
5. B
6. 1200 meter range line
- 7.a. Gunner's periscope IR reticle
  - b. Rangefinder main gun-laying reticle
  - c. Rangefinder auxiliary gun-laying reticle
8. Record the slip scale settings.
9. 500 meters
12. 800 meters
13. B
14. B



15.a. Fire a 20-30 round burst.

b. Adjust the machinegun as necessary to move the strike zone onto the target aiming point.

17.a. Index 1600 meters into the rangefinder.

b. Index HEAT ammunition into the computer.

c. Put the main gun on SAFE.

d. Load HEAT ammunition into the main gun.

(Only c and d have to be in order.)

AUXILIARY FIRE CONTROL INSTRUMENTS [EXCLUSIVE OF AZIMUTH INDICATOR]  
(020-171-5337-F)

1. Minus 146

2. B

SCORING KEY.

Award 5 points for each correct response (720 possible points).

PASSING SCORE = 650 points.

## TANK COMMANDER'S READINESS TEST

### PART E. WEAPON SYSTEMS PREPARATION (HO)

**CONDITIONS.** Fully operational M60A1 tank situated on level ground with BII and coax and M85 mounted. Boresight and zero panels are at 500 meters for M85, 800 meters for coax, and 1200 meters for main gun.

**INSTRUCTIONS TO TANK COMMANDER.** "Prepare the weapon systems on your tank for a tactical operation. If necessary, I will give you the information for your shot groups during zeroing. You will be scored on what you do as well as how you do it. I will observe your performance and serve as other crew members as needed."

#### TASKS.

Prepare the tank for boresighting.

- \*\*Boresight the Gunner's telescope and apply established zero.
- \*\*Boresight the daylight sight of the Gunner's periscope and apply established zero.
- \*\*Boresight the IR sight of the Gunner's periscope, during daylight, and apply established zero.
- \*Boresight tank searchlight using primary method.
- \*Boresight tank searchlight using alternate method.
- \*\*Boresight the coax.
- \*Prepare tank rangefinder for operation.
- \*Boresight the rangefinder.
- \*Determine range to target with rangefinder.
- \*Zero tank main gun.
- \*\*Zero coax.
- \*\*Index announced ammunition into computer and conduct computer test.
- \*Boresight M85.
- \*Zero M85.

#### NOTES.

- a. The TC should not be given this test until he has passed Tank Commander's Readiness Test, Part A and completed the written TEC Lesson pre-tests for Gunner's Readiness Test, Part B and any remedial training necessary on TEC Lessons failed.

- b. Remedial training of tasks failed should be provided on the spot but after TC has completed Part D. See Module TC-5 for remedial training.
- c. Task 5 (Boresight tank searchlight using primary method) must be performed at night. This task should be performed concurrently with Gunner task E-9.
- d. Task 6 (Boresight tank searchlight using alternate method) must be performed at a location where a wall is available to reflect the beam.
- e. If live fire cannot be used to zero the weapons, the test administrator must arrange for simulated firing and simulated shot groups. The simulated shot group can be accomplished by having an assistant scorer down range to place discs over the zero panels to represent target hits.
- f. In the Performance Measures section which follows, the role of the scorer as Gunner, Loader, or Driver is indicated by "Gunner" or "Loader" or "Driver". The scorer, acting as either, should perform as indicated.
- g. The scorer must not give the TC any more information than he would have on the job. One goal of the Tank Commander's Readiness Test is to determine whether the TC can ready himself and his crew for a combat mission with a minimum of supervision.
- h. All performance measures and steps within each task should be performed in the order given.
- i. Cross training tasks are indicated by a # symbol.
- j. Estimated time, 1 1/4 hours.

#### PERFORMANCE MEASURES.

##### 1. PREPARE TANK FOR BORESIGHTING

(TC as Loader)

- . Placed thread over witness lines on muzzle end of main gun and secured thread tautly.
- . Removed firing pin mechanism from breechblock.
- . Centered right telescope of binocular over firing pin hole.
- . Checked alinement of main gun by sighting through firing pin hole with binocular to see if cross threads lay on aiming point.
- . Reported gun out of alinement (or reported gun correctly alined).

Yes No NA

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

	Yes	No	NA
(TC as Gunner)			
. Alined axis of main gun bore on right angle of aiming point by operating manual traversing and elevating handles.	_____	_____	_____
(TC as TC)			
. Directed Driver to position tank on level ground.	_____	_____	_____
2. BORESIGHT THE GUNNER'S TELESCOPE AND APPLY ESTABLISHED ZERO.			
(TC as Gunner)			
. Set superelevation counter on ballistic computer to zero.	_____	_____	_____
. Moved reticle selector switch until reticle corresponding to type of ammunition that will be used to zero can be seen through eyepiece.	_____	_____	_____
. Unlocked telescope mount elevation and deflection boresight knobs.	_____	_____	_____
. Rotated boresight knobs until the boresight aiming point is in same position as muzzle cross threads.	_____	_____	_____
. Moved elevation and deflection knob locking lines to LOCK position.	_____	_____	_____
. Rotated slip scales on the elevation and deflection knobs to read 3 and 3.	_____	_____	_____
. Told Loader to confirm that muzzle cross threads are on aiming point.	_____	_____	_____
. Obtained established zero from DA Form 2404.	_____	_____	_____
. Unlocked telescope mount elevation and deflection boresight knobs.	_____	_____	_____
. Rotated boresight knobs until established zero was indicated on the slip scales.	_____	_____	_____
. Locked telescope mount elevation and deflection boresight knobs.	_____	_____	_____
3. BORESIGHT THE DAYLIGHT SIGHT OF THE GUNNER'S PERISCOPE AND APPLY ESTABLISHED ZERO			
(TC as Gunner)			
. Sighted through eyepiece, disengaged elevation and deflection boresight knobs, and rotated knobs until aiming cross is on same aiming point as muzzle cross threads.	_____	_____	_____
. Rotated slip scale on the elevation and deflection boresight knobs to read 4 and 4.	_____	_____	_____

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Checked to assure that daylight sight reticle is on aiming point.	---	---	---
. Told Loader to confirm that muzzle cross threads were on aiming point.	---	---	---
. Obtained established zero from DA Form 2404.	---	---	---
. Unlocked periscope mount elevation and deflection boresight knobs.	---	---	---
. Rotated boresight knobs until established zero was indicated on the slip scales.	---	---	---
. Locked periscope mount elevation and deflection boresight knobs.	---	---	---
4. BORESIGHT THE IR SIGHT OF THE GUNNER'S PERISCOPE AND APPLY ESTABLISHED ZERO			
(TC as Gunner)			
. Opened the ballistic shield.	---	---	---
. Placed opaque material over the periscope head assembly with a 3/4 inch hole in line with the IR body.	---	---	---
. Placed the IR switch in 1.5 volt position.	---	---	---
. Viewed through IR eyepiece and rotated IR diopter to maximum plus reading then back until grain on converter tube surface as seen through eyepiece appeared clear and sharp.	---	---	---
. Rotated light source control until reticle illumination had desired brightness.	---	---	---
. Sighted through eyepiece and rotated focusing ring until target appeared with maximum sharpness.	---	---	---
. Disengaged and rotated elevation and deflection boresight knobs until aiming cross of reticle was aligned on same aiming point as muzzle cross threads.	---	---	---
. Rotated slip scale on elevation and deflection boresight knobs to read 4 and 4.	---	---	---
. Checked to insure that aiming cross on reticle of daylight scope was on aiming point.	---	---	---
. Told Loader to confirm that muzzle cross threads were on aiming point.	---	---	---
. Obtained established zero from DA Form 2404.	---	---	---
. Disengaged and rotated elevation and deflection boresight knobs until established zero was on the slip scales.	---	---	---
. Engaged elevation and deflection boresight knobs.	---	---	---

Yes No NA

5. BORESIGHT TANK SEARCHLIGHT USING PRIMARY METHOD

(TC as TC)

- . Selected target as near to 1200 meters as possible. \_\_\_
- . Told Driver to idle engine at 1000-1200 rpm. \_\_\_
- . Turned searchlight main power switch to the ON position and turned searchlight control to VIS FOCUS mode. \_\_\_
- . Adjust azimuth and elevating adjusting screws until searchlight beam is centered on target cross. \_\_\_
- . Tell the Gunner to elevate the gun 5 mils. \_\_\_
- . Aline the searchlight so that the beam is again centered on the target cross. \_\_\_
- . Tighten the clamping nuts. \_\_\_

(TC as Gunner)

After "TC" turned searchlight ON and control to VIS FOCUS mode:

- . Removed all superelevation from fire control system using computer's superelevation handcrank. \_\_\_
- . Laid aiming cross of primary sight on center of boresight panel or target chosen. \_\_\_
- . Centered bubble on elevation quadrant using micrometer knob. \_\_\_
- . Applied plus 5 mils on elevation quadrant using micrometer knob. \_\_\_
- . Manually elevated the gun until bubble is centered. \_\_\_

6. BORESIGHT TANK SEARCHLIGHT USING ALTERNATE METHOD

(TC as TC)

- . Directed Driver to position tank so searchlight was approximately 10 meters from a wall. \_\_\_
- . Drew a cross on wall approximately 7 feet from ground. \_\_\_
- . Drew a second cross 16 1/2 inches directly above first cross and vertically in line with first cross. \_\_\_
- . Told Driver to insure that the tank engine is run at a fast idle speed. \_\_\_
- . Turned searchlight main power switch to ON position and turned searchlight control to VIS FOCUS mode. \_\_\_
- . Adjusted horizontal and vertical adjustment screws until searchlight beam was centered on upper cross. \_\_\_
- . Told Loader to draw reference mark at bottom edge of searchlight beam. \_\_\_
- . Adjusted vertical and horizontal adjustment screws until bottom of searchlight beam was above and just touching reference mark. \_\_\_

Yes No NA

(TC as Gunner)

After "TC" laid the bottom of searchlight beam above and just touching reference mark:

- . Removed superelevation from fire control system using computer's handcrank.
- . Boresighted main gun on lower cross.
- . Centered the bubble on elevation quadrant using micrometer knob.
- . Applied plus 5 mils to elevation quadrant using micrometer knob.
- . Manually elevated gun until bubble is centered.

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# 7. BORESIGHT THE COAX

(TC as Loader)

- . Removed solenoid electrical lead from machinegun backplate assembly by pulling solenoid plug down.
- . Pulled right disconnecter ring rearward to disengage disconnecter pin from disconnecter hole.
- . Rotated receiver downward and pulled rearward until disengaged from mounting block.
- . Loosened support setscrews located in gun mount cover shield collar approximately 1 1/2 turns.
- . Selected target employed to boresight main gun with a clearly defined right angle at a distance of 1200 meters.
- . Alined machinegun bore vertically on target while viewing aiming point through right binocular M17A1 so as to adjust machinegun elevation alinement with bore of main gun by loosening or tightening adjusting screws.
- . Alined machinegun bore horizontally while viewing aiming point through right binocular M17A1 so as to adjust machinegun azimuth alinement with bore of main gun by loosening or tightening front end and rear horizontal adjusting screws.
- . Insured that all lock and jam nuts are tightened securely.
- . Adjusted support setscrews in gun mount cover shield collar until they contacted flash suppressor body then backed them off 1/4 to 1/2 turn.

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(TC as Gunner)

Yes No NA

7. BORESIGHT THE COAX

After "Loader" tightened both horizontal adjustment screws:

- . Rotated, either to left or right, rheostat knob on infinity sight M44C for periscope M31 or rheostat knob of light source control for periscope M32 in order to adjust brightness of reticle. \_ \_ \_
- . Rotated both elevation and deflection boresight knobs on infinity sight so as to aline center reticle on aiming point of target. \_ \_ \_

8. PREPARE TANK RANGEFINDER FOR OPERATION

- . Adjusted rangefinder headrest to fit the contour of the head. \_ \_ \_
- . Rotated occluder knob to the R position. \_ \_ \_
- . Rotated the diopter scale until the view through the eyepiece appears with the maximum sharpness. \_ \_ \_
- . Moved the filter switch to the left to place the filters into the optical systems if necessary. \_ \_ \_
- . Rotated the range scale rheostat to determine if range scale lamp is illuminated. \_ \_ \_
- . Set rheostat until desired brightness is obtained. \_ \_ \_
- . Rotated the occluder to L position. \_ \_ \_
- . Moved the reticle switch to AUX-GUNSIGHT position. \_ \_ \_
- . Sighted through the eyepiece and set red illuminated reticle for brightness by rotating reticle rheostat. \_ \_ \_
- . Rotated occluder knob to the center position and moved reticle switch to coincidence position. \_ \_ \_
- . Sighted through the eyepiece and set coincidence reticle brightness by rotating coincidence reticle rheostat. \_ \_ \_
- . Moved reticle switch to OFF position. \_ \_ \_
- . Rotated the occluder knob to R position. \_ \_ \_
- . Rotated the occluder knob to center position. \_ \_ \_
- . Indexed target range on range scale. \_ \_ \_
- . Sighted through eyepiece and rotated horizontal adjustment knob until the ghost image is positioned to the left of the actual image. \_ \_ \_
- . Rotated vertical adjustment knob to bring ghost image into vertical alinement with actual image. \_ \_ \_
- . Rotated the horizontal adjustment knob to bring the ghost image into alinement with the actual image from the left to the right--stop the instant coincidence has been obtained. \_ \_ \_



	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Checked target image coincidence by ranging on a known distance target.	___	___	___
. Moved reticle switch to coincidence position.	___	___	___
. Loosened the wing nut and swung the red ICS knob cover aside.	___	___	___
. Rotated the ICS knob until vertical lines of the upper coincidence reticle were alined.	___	___	___
. Loosened the wing nut and swung the red halving knob cover aside.	___	___	___
. Rotated halving knob until horizontal lines of the upper right half and the lower left portions of the coincidence reticle were alined to form a cross.	___	___	___
. Swung the ICS and halving knob covers into place and secured with wing nuts.	___	___	___
. Moved reticle switch to the OFF position.	___	___	___
<b>9. BORESIGHT THE RANGEFINDER</b>			
. Checked coincidence reticle for alinement and if necessary, alined reticle using horizontal and vertical adjustment knobs.	___	___	___
. Indexed known tank to target range (1200 meters) on range scale.	___	___	___
. Placed the occluder knob on the rangefinder in the R position.	___	___	___
. Moved the locking levers of the main elevation and deflection boresight knobs to the unlocked position.	___	___	___
. Sighted through rangefinder eyepiece and alined the black-etched cross on the sight reticle with the same aiming point as the main gun bore axis.	___	___	___
. Moved the boresight knob locking levers to the locked position.	___	___	___
. Rotated slip scale to read 2 on elevation boresight knob and 3 on deflection boresight knob.	___	___	___
. Placed the occluder knob in the L position.	___	___	___
. Placed the reticle switch on the rangefinder in the AUX-GUNSIGHT position.	___	___	___
. Unlocked auxiliary elevation and deflection knobs.	___	___	___
. Rotated the knobs to aline the red illuminated cross on the same aiming point as the main gun bore axis.	___	___	___
. Locked AUX-GUNSIGHT elevation and deflection knobs.	___	___	___
. Rotated slip scale on auxiliary elevation boresight knob to read 2 and the auxiliary deflection boresight knob to read 3.	___	___	___
. Checked main gun bore axis, main gun-laying reticle of the rangefinder, and the AUX-GUNSIGHT to assure that each is alined on the same aiming point.	___	___	___

- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| <b>10. DETERMINE RANGE TO TARGET WITH RANGEFINDER</b>   |            |           |           |
| . Placed occluder knob in center position.  | ___        | ___       | ___       |
| . Ranged to the boresight target.   | ___        | ___       | ___       |
| . Rotated range knob until two target images merge.   | ___        | ___       | ___       |
| . Read range to target on range scale.  | ___        | ___       | ___       |
| <b>11. ZERO TANK MAIN GUN</b>   |            |           |           |
| (TC as TC)  |            |           |           |
| . Turned computer switch ON.  | ___        | ___       | ___       |
| . Indexed range into rangefinder.   | ___        | ___       | ___       |
| (TC as Gunner)  |            |           |           |
| After "TC" turned computer ON:  |            |           |           |
| . Assured range correlation knob of ballistic computer is indexed correctly.  | ___        | ___       | ___       |
| . Indexed ammunition element into ballistic computer.   | ___        | ___       | ___       |
| . Laid sight reticle on center of mass of target by operating <u>manual</u> elevation and traversing handles.                                   | ___        | ___       | ___       |
| After "Loader" announced UP:  |            |           |           |
| . Fired a three-round shot group.   | ___        | ___       | ___       |
| . Unlocked boresight knobs and moved sight reticle to center of shot group, without disturbing lay of gun (with gun loaded).                    | ___        | ___       | ___       |
| . Relaid main gun back to center of mass by operating <u>manual</u> elevation and traversing handles.   | ___        | ___       | ___       |
| . Fired a check round.  | ___        | ___       | ___       |
| . Relaid main gun back to center of mass by operating <u>manual</u> elevation and traversing handles.   | ___        | ___       | ___       |
| . Unlocked boresight knobs of Gunner's sight not used to zero and rotated knobs until proper portion of reticle is laid on target aiming point. | ___        | ___       | ___       |
| . Recorded elevation and deflection readings on all sights on DA Form 2404.   | ___        | ___       | ___       |
| <b>12. ZERO COAX</b>  |            |           |           |
| (TC as TC)  |            |           |           |
| . Rotated range knob of rangefinder to range of target.   | ___        | ___       | ___       |

Yes No NA

(TC as Gunner)

- . Selected a target with a clearly defined aiming point at a known range as near 800 meters as possible.
- . Indexed the lowest velocity tank main gun ammunition in the ballistic computer.
- . Sighted through the unity power window of the Gunner's periscope and laid the target in the center of the aiming circle by operating the manual elevation and traversing handles.

\_\_\_\_\_  
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After "Loader" announced UP:

- . Placed the electrical machinegun switch on the Gunner's panel in the ON position.
- . Depressed the electrical firing trigger and fired a 20-25 round burst.
- . Observed the strike of the rounds in relation to the target.
- . Rotated the infinity sight boresight knobs to move the sight reticle so that the strike area is in the center of the field of view.
- . Fired additional 20-25 round burst to check the accuracy of adjustment.
- . Rotated the infinity sight boresight knobs, if necessary, to readjust the field of view in relation to the strike of the rounds.

\_\_\_\_\_  
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\_\_\_\_\_  
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### 13. INDEX ANNOUNCED AMMUNITION INTO COMPUTER AND CONDUCT COMPUTER CHECK

(TC as Gunner)

- . Rotated ammunition selector handle 30 degrees clockwise, pushed handle in or pulled handle out to select ammunition to be fired as indicated on the ammunition indicator.

\_\_\_\_\_

(Computer Check)

- . With range correction knob at zero, rotated range knob on rangefinder and determined whether inner (range) pointer indicated same range on computer range dial as indexed on range scale of rangefinder.
- . Indexed ranges of 1100, 1200, or 2000 meters on range scale of rangefinder.
- . Indexed a type of ammunition into computer.
- . Turned the computer ON and determined whether super-elevation output shaft and superelevation actuator shaft rotate.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Determined whether outer (superelevation) pointer moves to match inner (range) pointer.	___	___	___
. Determined whether correct superelevation for range and ammunition selected is indicated on the superelevation mil counter (use firing tables).	___	___	___
<b>14. BORESIGHT M85</b>			
. Assured safety is in S position.	___	___	___
. Assured ammunition belt is clear of machinegun.	___	___	___
. Assured machinegun is not loaded and bolt assembly is in forward position.	___	___	___
. Disconnected solenoid lead connector.	___	___	___
. Opened cradle cover zipper, access doors, and machinegun cover assembly.	___	___	___
. Depressed lock, raised latch, and lifted backplate assembly from receiver assembly.	___	___	___
. Removed bolt buffer group from receiver assembly.	___	___	___
. Removed sear from receiver assembly.	___	___	___
. Removed bolt assembly from barrel extension assembly and receiver assembly.	___	___	___
. Held feed lever of feed and ejector assembly and sighted through machinegun barrel and alined axis of gun bore on defined target approximately 500 meters in range.	___	___	___
. Locked azimuth lock.	___	___	___
. Adjusted deflection without moving the gun or cupola.	___	___	___
. Adjusted elevation to aline boresight cross on target aiming point.	___	___	___
. Elevated and depressed gun to check for backlash.	___	___	___
. Installed bolt assembly.	___	___	___
. Installed sear assembly.	___	___	___
. Installed bolt buffer group.	___	___	___
. Installed backplate.	___	___	___
. Closed machinegun cover assembly, access doors, and cradle cover zipper.	___	___	___
<b>15. ZERO M85</b>			
. Selected a target with a clearly defined aiming point at a range of 500 meters.	___	___	___
. Laid the 500 meter aiming point of Tank Commander's weapon sight on aiming point of zeroing targets with elevating and traversing controls.	___	___	___
. Fired a 10-20 round burst.	___	___	___
. Moved the 500 meter reticle to center of strike area without disturbing lay of the gun.	___	___	___
. Fired another 10-20 round burst to verify the zero.	___	___	___

**SCORING.**

To pass, Tank Commander must have:

- a. Initiated performance on all tasks without cueing by scorer.
- b. Been checked "Yes" or "NA" on each performance measure.
- c. The scorer must verify that optics are boresighted by confirming that aiming crosses are on the same aiming points as muzzle crossthreads.
- d. Range read to target on range scale (Task E.10) must be  $\pm 50$  meters of actual range.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART F. COMBAT LOADING (W)

**CONDITIONS.** The Tank Commander is in a classroom and is administered TEC pre-tests 020-171-5331-F, 020-171-5332-F, and 020-171-5346 through 020-171-5348-F.

**INSTRUCTIONS TO TANK COMMANDER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test is in five parts: Tank Ammo: Selecting Ammunition (TEC Lesson 020-171-5331-F), Tank Ammo: Handling, Main Gun (TEC Lesson 020-171-5332-F), 105MM Gun: Loading (TEC Lesson 020-171-5346-F), 105MM Gun: Misfire Procedures (TEC Lesson 020-171-5347-F), and 105MM Gun: Unloading (TEC Lesson 020-171-5348-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and the answer sheet to the Test Proctor."

### TASKS.

- Identify various types of main gun ammunition.
- Identify various types of machinegun ammunition.
- Identify correct method of linking machinegun ammunition.
- Watch various types of main gun ammunition with various types of targets.
- Explain "Loader's" action upon hearing a main gun fire command.
- Explain procedure for loading a main gun round into the chamber.
- Explain safety precautions when operating the breech operating handle.
- Explain "Loader's" main gun misfire procedures after Gunner has tried all firing circuits.
- Explain "Loader's" misfire procedures for a cool gun and a hot gun after all firing actions have failed.
- Explain procedure to follow when unable to remove a misfired round from a hot gun.
- Explain position of "Loader's" safety switch before unloading a misfired round.
- Explain procedure for removing a round partially stuck in the chamber.
- Explain procedure for removing a projectile stuck in the tube.
- Explain how to close the breech manually.
- Explain procedure for testing the firing circuit.

NOTES.

- a. See Module TC-6 for remedial training of deficiencies.
- b. Estimated time, 3/4 hour.

## TANK COMMANDER'S READINESS TEST

### PART F: COMBAT LOADING

The Test Proctor will administer the following TEC Lesson pre-tests and the Tank Commander will answer only those questions indicated:

- . Tank Ammo: Selecting Ammunition (020-171-5331-F)
  - Tank Commander will answer all questions.
- . Tank Ammo: Handling, Main Gun (020-171-5332-F)
  - Tank Commander will answer questions 3, 4, and 6.
- . 105MM Gun: Loading (020-171-5346-F)
  - Tank Commander will answer all questions.
- . 105MM Gun: Misfire Procedures (020-171-5347-F)
  - Tank Commander will answer all questions.
- . 105MM Gun: Unloading (020-171-5348-F)
  - Tank Commander will answer questions 1, 2, 3, 5, and 6.



TANK COMMANDER'S READINESS TEST

PART F: COMBAT LOADING

TEC Lessons 020-171-5331-F,  
020-171-5332-F, 020-171-  
5346-F, 020-171-5347-F,  
and 020-171-5348-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5331-F

1.a.

b.

c.

d.

e.

f.

2.

3.a. \_\_\_\_ Trace

b. \_\_\_\_ AP (armor piercing)

c. \_\_\_\_ Ball

d. \_\_\_\_ APIT (armor piercing-  
incendiary trace)

e. \_\_\_\_ API (armor piercing-  
incendiary)

4.

5.

6.

7.

8.

9.

10.

11.

020-171-5332-F

3.

4.

6.a.

b.

c.

020-171-5346-F

1.a.

b.

c.

d.

e.

f.

g.

h.

2.

3.

020-171-5347-F

1. FIRST MISFIRE. The Gunner:

- a.
- b.
- c.
- d.

2. SECOND MISFIRE. The Gunner:

- a.
- b.
- c.
- d.

3. THIRD MISFIRE. The Gunner:

- a.
- b.
- c.
- d.
- e.

4. FOURTH MISFIRE. Actions of the Loader and Gunner follow:

- a. Gunner -
- b. Loader -
- c. Loader -
- d. Loader -
- e. Loader -
- f. Loader -
- g. Loader -
- h. Loader -

i. Gunner -

j. Gunner -

k. Gunner -

l. Gunner -

5. FIFTH MISFIRE.

a. Cool Gun

(1) Gunner -

(2) Loader -

(3) Loader -

(4) Loader -

b. Hot Gun

(1) Gunner -

(2) Loader -

(3) Loader -

(4) Loader -

6.a. Loader -

b. Loader -

c. TC -

d. Loader -

020-171-5348-F

1.a.

b.

2.a.

b.

3.a.

b.

c.

- d.
- e.
- 5.
- 6.a.
- b.
- c.
- d.
- e.
- f.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

TANK COMMANDER'S READINESS TEST

PART F: COMBAT LOADING

PRE-TEST ANSWER KEY

TEC Lessons 020-171-5331-F,  
020-171-5332-F, 020-171-  
5346-F, 020-171-5347-F,  
and 020-171-5348-F.

ANSWER KEY

TANK AMMO: SELECTING AMMUNITION  
(020-171-5331-F)

- 1.a. SABOT
- b. HEAT
- c. HEAT
- d. HEP
- e. SMOKE
- f. BEEHIVE

2. A

3.a. C Trace

b. B AP

c. A Ball

d. E APIT

e. D API

4. A

5. C

6. D

7. C

8. E

9. D

10. C

11. B

TANK AMMO: HANDLING, MAIN GUN  
(020-171-5332-F)

- 3. A
- 4. A
- 6.a. Remove round from tank
- b. Place in misfire bunker
- c. Notify supervisory personnel

105MM GUN: LOADING  
(020-171-5346-F)

- 1. The correct actions and sequence for loading the main gun follow:
  - a. Make sure the Loader's safety switch is in the SAFE position.
  - b. Open the breech if it is closed.
  - c. Inspect the chamber for obstructions.
  - d. Select the ammunition called for. (SABOT)
  - e. Place the round two-thirds of the way into the chamber and push it the rest of the way in with the heel of the first.
  - f. Stand clear of the recoil path and make sure the recoil path is clear.
  - g. Place the Loader's safety switch in the FIRE position.
  - h. Announce UP.
- 2. B

The Loader has his fingers extended rather than having them formed into a fist.
- 3. The operating handle will fly up with enough force to cause serious injury if it strikes the Loader.

105MM GUN: MISFIRE PROCEDURES  
(020-171-5347-F)

1. FIRST MISFIRE. The Gunner:
  - a. Announces MISFIRE.
  - b. Announces ON THE WAY.
  - c. Waits one second.
  - d. Presses other (or right) trigger on the power control handle.
2. SECOND MISFIRE. The Gunner:
  - a. Announces MISFIRE.
  - b. Announces ON THE WAY.
  - c. Waits one second.
  - d. Presses the trigger on the manual elevating handle.
3. THIRD MISFIRE. The Gunner:
  - a. Announces MISFIRE.
  - b. Turns main gun switch on Gunner's switch box to OFF.
  - c. Announces ON THE WAY.
  - d. Waits one second.
  - e. Rotates the emergency firing device clockwise.
4. FOURTH MISFIRE. Actions of the Loader and Gunner follow:

<u>WHO</u>	<u>ACTION</u>
a. Gunner	Announces MISFIRE.
b. Loader	Puts Loader's safety switch on SAFE.
c. Loader	Waits two minutes.
d. Loader	Opens breech.
e. Loader	Rotates round one-half turn.
f. Loader	Reloads the round.



- | <u>WHO</u>  | <u>ACTION</u>                                 |
|---|---|
| g. Loader   | Puts Loader's safety switch on FIRE.          |
| h. Loader   | Announces UP.                                 |
| i. Gunner   | Puts main gun switch on FIRE.                 |
| j. Gunner   | Announces ON THE WAY.                         |
| k. Gunner   | Waits one seconds.                            |
| l. Gunner   | Presses <u>any</u> electircal firing trigger. |
| 5. FIFTH MISFIRE.   |   |
| a. <u>Cool Gun</u>  |   |
| (1) Gunner announces MISFIRE.   |   |
| (2) Loader makes sure Loader's safety switch is on SAFE.  |   |
| (3) Loader waits two minutes to allow for a possible hangfire.  |   |
| (4) Loader removes round from breech.   |   |
| b. <u>Hot Gun</u>   |   |
| (1) Gunner announces MISFIRE.   |   |
| (2) Loader makes sure Loader's safety switch is on SAFE.  |   |
| (3) Loader waits two minutes to allow for a possible hangfire.  |   |
| (4) Loader removes round from the breech within one additional minute.  |   |
| 6. The following steps are taken when the Loader is unable to remove a misfired round from a hot gun within one additional minute after he has waited two minutes to allow for a possible hangfire. |   |
| a. The Loader closes the breech.  |   |
| b. The Loader makes sure the Loader's safety switch is in the SAFE position.  |   |
| c. The Tank Commander orders the crew to evacuate the tank for two hours.   |   |
| d. At the end of two hours, the Loader, assisted by other crewmen and safety personnel, removes the round.  |   |

105MM GUN: UNLOADING  
(020-171-5348-F)

- 1.a. Loader's safety switch. Wrong.
- b. Gunner's main gun switch. Wrong.
- 2.a. One crewman holds the breech operating handle down.
- b. Another crewman pries the round out of the chamber with the ramming and extracting tool.
- 3.a. Fill the chamber with rags to cushion the base of the projectile.
- b. Close the breech manually.
- c. Push the rammer down the tube until the bell of the rammer is resting on the projectile, then apply steady pressure until the projectile is freed from the tube and pushed into the cushion of rags in the chamber. (Any shorter version of this answer is satisfactory as long as the rammer, steady pressure, and freed from the tube are included.)
- d. Open the breech.
- e. Remove the projectile.
- 5. Trip the extractors with a wooden block.
- 6.a. Make sure the main gun is not loaded.
- b. Close the breech manually.
- c. Insert the circuit tester between the breechblock and the breech ring.
- d. Turn the master battery, turret power, and main gun switches ON. Place the Loader's safety in the FIRE position.
- e. Press the firing triggers on the power control handle, the manual elevating handle, and the Tank Commander's override.
- f. Observe the lamp on the circuit tester. If it lights, the circuit is OK.

SCORING KEY.

Award 5 points for each correct response (440 possible points).

PASSING SCORE = 400 points.

## TANK COMMANDER'S READINESS TEST

### PART G. COMBAT LOADING (HO)

**CONDITIONS.** M60A1 tank with BII, situated on level ground. An Ammunition Stowage Plan and dummy rounds (3-ADPS, 3-HEAT, 2-HEP, 1 belt empty 7.62 machinegun and 1 belt empty .50 caliber machinegun) are located next to the tank. All main gun ammunition stowage areas are blocked off with the exception of eight slots in the ready rack; empty slots should correspond to the stowage plan and type of dummy rounds. Two dimensional cardboard representations of 7.62mm and .50 caliber machinegun ammunition boxes are used for stowage of machinegun ammunition, replenisher tape mock-up positioned forward of "Loader." The tape can be set at any one of four positions: one rough edge and one smooth edge, two rough edges, two smooth edges, or two long notches.

**INSTRUCTIONS TO THE TANK COMMANDER.** "During this test you will act as the Loader and TC. In the first part of the test assume we are preparing the tank for a combat mission. First, you will stow ammunition aboard the tank in accordance with the unit's Ammunition Stowage Plan. Next, I will give you some different settings on the replenisher mock-up and you are to tell me what actions you will take for each setting--before, during, and after firing. I will set the tape and you will go the mock-up, feel the tape, and immediately report what action is called for. The last part of the test will be performing the duties of the Loader and TC under simulated combat conditions. We will carry ADPS ammunition in the tube for battlesight engagements, so begin by loading an ADPS round. Listen to fire commands and react accordingly. Since you will be working with dummy rounds, you will have to unload the rounds between firing. But wait until I give the command to unload. During the fire commands sequence, a main gun MISFIRE and a coax stoppage will be announced by the Gunner (Scorer). In addition, you will get into the TC's position and load, clear, and apply immediate action to the .50 caliber machinegun. OK . . . First stow ammunition on the tank according to the unit's stowage plan."

### TASKS.

- \*\*Stow main gun rounds according to Ammunition Stowage Plan.
- \*\*Stow machinegun ammunition according to Ammunition Stowage Plan.
- \*\*Stow coax ammunition in the ready (banana) box.
- \*\*Determine corrective action required by replenisher tape readings.
- \*\*Load main gun in response to fire commands.
- \*\*Rotate round in main gun misfire procedure.

#\*Unload main gun misfired round.  
 #\*Load coax.  
 # Ready coax in response to fire command.  
 #\*Clear and unload coax.  
 #\*Apply immediate action to reduce coax stoppage.  
 #\*Change coax barrel.  
 \*Load M85.  
 \*Clear and unload M85.  
 \*Apply immediate action to reduce M85 stoppage.

#### NOTES.

- a. Tank Commander should not be given this test until he has passed Tank Commander's Readiness Test, Parts B, C, and F.
- b. Scorer should present each of the four replenisher tape settings in a series of eight settings in random order to the "Loader."
- c. Remedial training for tasks failed should be provided on the spot but after the "TC" has completed all of Part G. See Module TC-7 for remedial training.
- d. It is necessary to perform the tasks and the steps within each task in the order given.
- e. For Performance Measures 5 and 9, Scorer gives a series of fire commands, at about 15 second intervals, that requires loading the available type of dummy rounds interspersed with two or three coax commands. A suggested sequence is:
  - (1) Battlesight (SABOT) HEP, HEAT, COAX, HEP, MISFIRE.
  - (2) (Reload for battlesight) SABOT, (NO "CEASE FIRE"), SABOT, HEAT, COAX, STOPPAGE.
- f. The MISFIRE command provides a break in the sequence. After Scorer goes through MISFIRE checks, tells the "Loader" to rotate the round, and round still fails to fire, he then waits two minutes for a hang fire, tells "Loader" to unload the round, and assists him in doing so.
- g. Loading should be timed with a stop watch. Timing should begin with the announcement of the ammunition element and with the "Loader's" announcement, UP. Time should be cumulated for each series of fire commands.
- h. Cross training tasks are indicated by a # symbol.
- i. Estimated time, 1 1/4 hours.

# PERFORMANCE MEASURES.

	Yes	No	NA
1. STOW MAIN GUN ROUNDS ACCORDING TO AMMUNITION STOWAGE PLAN			
. Determined by reference to Ammunition Stowage Plan and present load, how many of each type of round is needed.	_____	_____	_____
. Called out to assisting crewman how many of a given type of round is wanted.	_____	_____	_____
. Insisted that round be handed in through turret nose down.	_____	_____	_____
. Round stowed in:			
- Ready rack by placing primer end down, swinging hinge of holder up and to the left, pulling out spring loaded knob on rod of holder, sliding hinge slot over rod behind knob, and releasing the knob.	_____	_____	_____
- Tubular stowage rack by pushing round in nose first, swinging handle lock over primer end of round, and rotating handle lock securely in place.	_____	_____	_____
- Turret bustle by seating round with nose toward inside of turret, swinging hinge up and to the left, pulling up clamp and slotting hinge in place below clamp, and pulling clamp down.	_____	_____	_____
. Completed stowage of rounds one type at a time.	_____	_____	_____
2. STOW MACHINEGUN AMMUNITION ACCORDING TO AMMUNITION STOWAGE PLAN			
. Determined, by reference to Ammunition Stowage Plan and present load, how much of each ammunition is needed.	_____	_____	_____
. Called out to assisting crewman how much of a given type ammunition is needed.	_____	_____	_____
. Stowed 15 boxes of 7.62 coax ammunition on the turret platform floor. (Used cardboard representations.)	_____	_____	_____
. Stowed 600 rounds of 7.69 coax ammunition in the ready-round (banana) ammunition box. (See Test 13.)	_____	_____	_____
. Stowed 8 boxes of .50 caliber ammunition on the turret platform floor. (Used cardboard representations.)	_____	_____	_____
. Stowed 180 rounds of .50 caliber ammunition in the ready-round ammunition box.	_____	_____	_____

- |  | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|--|------------|-----------|-----------|
| 3. STOW COAX AMMUNITION IN READY (BANANA) BOX  |            |           |           |
| . Removed ammunition from metal packing box.   | ___        | ___       | ___       |
| . Inspected ammunition for serviceability and dirt.  | ___        | ___       | ___       |
| . Cleaned ammunition if required.  | ___        | ___       | ___       |
| . Linked 600 rounds together in one belt.  | ___        | ___       | ___       |
| . Opened ready box cover.  | ___        | ___       | ___       |
| . Placed 600 round belt in ready box with projectile<br>end of round toward turret wall.   | ___        | ___       | ___       |
| . Fed at least ten rounds of ammunition through<br>ammunition chute in ready box cover.  | ___        | ___       | ___       |
| . Closed ready box cover.  | ___        | ___       | ___       |
| 4. DETERMINE CORRECTIVE ACTION REQUIRED BY REPLENISHER<br>TAPE READINGS  |            |           |           |
| . Took no action if felt one rough edge and one<br>smooth edge.  | ___        | ___       | ___       |
| . Added oil to replenisher (after announcing, CEASE<br>FIRE, if during firing) if felt rough edges on<br>both sides of the tape.                               | ___        | ___       | ___       |
| . Continued to check tape frequently during firing<br>if felt smooth edges on both sides of tape,<br>but drained oil from replenisher at first<br>opportunity. | ___        | ___       | ___       |
| . Drained oil from replenisher (after announcing,<br>CEASE FIRE, if during firing) if felt two<br>long notches on tape.  | ___        | ___       | ___       |
| . Took correct action upon feeling rough edges on<br>both sides of replenisher tape.   | ___        | ___       | ___       |
| . Took corrective action upon feeling smooth edges<br>on both sides of replenisher tape.   | ___        | ___       | ___       |
| . Took no action upon feeling one rough edge and<br>one smooth edge on replenisher tape.   | ___        | ___       | ___       |
| . Took corrective action upon feeling two long notches<br>on replenisher tape.   | ___        | ___       | ___       |
| 5. LOAD MAIN GUN IN RESPONSE TO FIRE COMMANDS  |            |           |           |
| a. Battlesight, SABOT Loaded.  |            |           |           |
| . Stood clear of path of recoil.   | ___        | ___       | ___       |
| . Placed firing safety switch in FIRE.   | ___        | ___       | ___       |
| . Announced UP.  | ___        | ___       | ___       |
| . Prepared to load a second round in case no<br>CEASE FIRE is given.   | ___        | ___       | ___       |

	<u>Yes</u>	<u>No</u>	<u>NA</u>
b. Main Gun Not Loaded.			
. Placed firing safety switch in SAFE position.	—	—	—
. [Checked replenisher tape.]	—	—	—
. Opened breech.	—	—	—
. Selected announced ammunition.	—	—	—
. Unlocked ammunition ready rack.	—	—	—
. Inserted appropriate round into chamber by placing the round two-thirds into chamber and pushing it rest of way with heel of fist, swinging arm up and away from closing breech.	—	—	—
. Stood clear of path of recoil.	—	—	—
. Placed firing safety switch in FIRE position.	—	—	—
. Announced UP.	—	—	—
c. SABOT Loaded, Different Ammunition Element Given.			
. Placed firing safety switch in SAFE position.	—	—	—
. [Checked replenisher tape.]	—	—	—
. Unloaded SABOT round.	—	—	—
. Placed and locked SABOT round in ready rack.	—	—	—
. Selected announced ammunition.	—	—	—
. Unlocked ammunition ready rack.	—	—	—
. Inserted appropriate round into chamber by placing round two-thirds into chamber, and pushing it rest of way with heel of fist, swinging arm up and away from closing breech.	—	—	—
. Stood clear of path of recoil.	—	—	—
. Placed firing safety switch in FIRE position.	—	—	—
. Announced UP.	—	—	—
. Prepared to load a second round in case no CEASE FIRE was given.	—	—	—
6. ROTATE ROUND IN MAIN GUN MISFIRE PROCEDURE			
On Gunner's command, ROTATE ROUND:			
. Placed firing safety switch in SAFE position.	—	—	—
. Opened breech slowly enough to extract round about 1/2 way.	—	—	—
. Rotated round 1/2 turn.	—	—	—
. Pushed round into chamber with heel of fist, swinging arm up and away from closing breech.	—	—	—
. Stood clear of path of recoil.	—	—	—
. Placed firing safety switch in FIRE position.	—	—	—
. Announced UP.	—	—	—

Yes No NA

7. UNLOAD MISFIRED MAIN GUN ROUND

- . Told Gunner to turn main gun and turret power switches OFF. \_\_\_
- . Placed firing safety switch in SAFE position. \_\_\_
- . Opened breech. \_\_\_
- . Held breech operating handle down while TC (Gunner) pried round out of chamber. \_\_\_
- . Returned breech operating handle to latched position. \_\_\_

8. LOAD COAX

- . Pushed forward on rear of left cover latch rod assembly and raised cover. \_\_\_
- . Placed machinegun safety in FIRE position. \_\_\_
- . Charged (cocked) machinegun by pulling charger handle to rear. \_\_\_
- . Inspected chamber for obstructions by looking and feeling in chamber. \_\_\_
- . Placed safety in SAFE position. \_\_\_
- . Lowered feed tray. \_\_\_
- . Fed ammunition belt through chute of ammunition box. \_\_\_
- . Placed first round of ammunition belt in feed tray slot with open side of ammunition link loops facing down. \_\_\_
- . Closed machinegun cover assuring that lock rod is engaged. \_\_\_

9. READY COAX IN RESPONSE TO FIRE COMMANDS

- . Placed coax safety in FIRE position. \_\_\_
- . Announced UP. \_\_\_

10. CLEAR AND UNLOAD COAX

- . Placed safety in SAFE (S) position. \_\_\_
- . Pushed forward on rear of left rod assembly and opened cover assembly. \_\_\_
- . Removed ammunition belt from machinegun. \_\_\_
- . Lifted feed tray group, looked and felt that receiver and chamber were clear of ammunition. \_\_\_
- . Placed safety to FIRE (F) position. \_\_\_
- . Pulled charger handle rearward, depressed manual firing trigger and allowed barrel extension to close slowly. \_\_\_
- . Placed safety in SAFE (S) position. \_\_\_
- . Closed cover assembly. \_\_\_



- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| <b>11. APPLY IMMEDIATE ACTION TO REDUCE COAX STOPPAGE</b>   |            |           |           |
| On command, STOPPAGE:   |            |           |           |
| . Waited 5 seconds to allow for a hangfire.   | ___        | ___       | ___       |
| . Charged the machinegun, locking the recoiling parts to the rear.  | ___        | ___       | ___       |
| . Checked to see if the ammunition is feeding into the weapon.  | ___        | ___       | ___       |
| . Pulled barrel extension to the rear.  | ___        | ___       | ___       |
| . Placed safety in SAFE.  | ___        | ___       | ___       |
| . Raised cover and removed the ammunition.  | ___        | ___       | ___       |
| . Removed misfired round from chamber.  | ___        | ___       | ___       |
| . Placed safety in FIRE (F) and hand functioned the weapon one cycle.   | ___        | ___       | ___       |
| . Reloaded the weapon.  | ___        | ___       | ___       |
| . Announced UP.   | ___        | ___       | ___       |
| <b>12. CHANGE COAX BARREL</b>   |            |           |           |
| . Opened cover assembly and removed belted ammunition.  | ___        | ___       | ___       |
| . Charged weapon to sear position and placed safety in SAFE.  | ___        | ___       | ___       |
| . Removed live ammunition or spent cartridge from weapon chamber and links from encircled area.   | ___        | ___       | ___       |
| . Insured weapon is clear by looking into and feeling receiver and chamber.   | ___        | ___       | ___       |
| . Pulled disconnecter ring to rear to allow receiver assembly to rotate downward.   | ___        | ___       | ___       |
| . Removed barrel assembly from jacket assembly.   | ___        | ___       | ___       |
| . Installed new barrel assembly in jacket assembly.   | ___        | ___       | ___       |
| . Rotated receiver assembly upward and allowed disconnecter to engage into jacket assembly mounting block.  | ___        | ___       | ___       |
| . Placed safety in FIRE and hand functioned weapon one cycle.   | ___        | ___       | ___       |
| . Loaded weapon and attempted to fire.  | ___        | ___       | ___       |
| (WARNING: Use asbestos gloves when removing a hot barrel.)  |            |           |           |
| <b>13. LOAD M85</b>   |            |           |           |
| . Unlatched and raised cover.   | ___        | ___       | ___       |
| . Visually checked and felt in chamber for round.   | ___        | ___       | ___       |
| (NOTE: If bolt was in forward position, placed safety in FIRE (F) position and pulled charger handle rearward until bolt assembly was in rear position. Checked and felt in chamber for round.) |            |           |           |

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. With safety in FIRE (F) position, pulled charger handle fully rearward and while keeping tension on handle pulled trigger extension handle, depressing trigger to allow bolt assembly to close slowly.	—	—	—
. Placed .50 caliber ammunition in ammunition box and fed bolt until three or four rounds were in flexible chute.	—	—	—
. Pulled rounds into feed tray assembly.	—	—	—
. Placed leading round of belt on tray with gun side of links down so it is held by belt retaining pawls.	—	—	—
. Closed cover assembly.	—	—	—
. Charged machinegun.	—	—	—
 14. CLEAR AND UNLOAD M85			
. Placed cupola firing safety switch in OFF position.	—	—	—
. Held cupola electrical power control switch in OFF position momentarily.	—	—	—
. Assured safety was in SAFE (S) position.	—	—	—
. Unlatched and opened cover assembly.	—	—	—
. If bolt assembly was in forward position, placed safety in FIRE (F) position and pulled charger handle until bolt assembly was fully rearward.	—	—	—
. Kept tension on charger handle, pulled trigger extension handle to depress trigger and allowed bolt assembly to close slowly.	—	—	—
. Placed safety in SAFE (S) position.	—	—	—
 15. APPLY IMMEDIATE ACTION TO REDUCE STOPPAGE OF M85			
. Waited 5 seconds to allow for hangfire.	—	—	—
. Charged the machinegun locking recoiling parts to rear.	—	—	—
. Checked to see if ammunition was feeding into machinegun.	—	—	—
. Attempted to fire weapon.	—	—	—
. Charged the machinegun to rear position.	—	—	—
. Rotated safety to SAFE (S).	—	—	—
. Raised cover and removed ammunition.	—	—	—
. Removed misfired round from chamber.	—	—	—
. Rotated safety to FIRE (F) and hand functioned the weapon one cycle.	—	—	—
. Reloaded the weapon.	—	—	—
. Attempted to fire weapon.	—	—	—

SCORING.

To pass, the Tank Commander must have:

- a. Stated the correct action for each of the eight test trials for during-firing and before-firing conditions.
- b. Responded in each trial without hesitation, immediately after feeling the tape.
- c. Executed the first five fire commands in a total time of 35 seconds, and the second four commands (five loading reactions) in 1 minute 35 seconds.
- d. Responded to MISFIRE, including unloading the misfire round, within 2 1/2 minutes.
- e. Responded to STOPPAGE by removing misfired round within 10 seconds of command, and completed procedure within 15 seconds.
- f. Selected the correct round in response to each fire command.
- g. Checked replenisher tape at least once during the test.
- h. Been checked "Yes" or "NA" on each performance measure.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART H. TARGET ACQUISITION (W)

**CONDITIONS.** The Tank Commander is in a classroom and is administered TEC pre-tests 020-171-1611-F, 020-171-1613-F, 020-171-1614-F, and 935-171-0203-F.

**INSTRUCTIONS TO TANK COMMANDER.** "You have received a test booklet and an answer sheet. Write your name social security number, tank number, and today's date on the answer sheet. The test consists of four parts: Target Range Estimation (TEC Lesson 020-171-1611-F), Locating and Reporting Targets (TEC Lesson 020-171-1612-F), Target Acquisition Scanning Techniques (TEC Lesson 020-171-1614-F), and Armor Vehicle Recognition (TEC Lesson 935-171-0203-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish turn in the test booklet and answer sheet to the Test Proctor."

#### TASKS.

- Explain the range estimation method in which you estimate the range half the distance to the target.
- Explain the range estimation method in which a target at a known range appears half as big as a like target at an unknown range.
- Explain the range estimation method in which a target at a known range appears half as big as a like target at an unknown range.
- Explain the range estimation method in which a target at a known range appears twice as big as a like target at an unknown range.
- Explain location of targets by the clock system.
- Explain reporting of targets by the clock system.
- Explain the technique of quick search scanning of an area.
- Explain ways to adapt your eyes to the darkness.
- Explain how to preserve night vision.
- Explain how to scan an area at night.
- \*Identify US and Foreign Armor Vehicle.

#### NOTES.

- a. See Module TC-8 for remedial training of deficiencies.
- b. Estimated time, 1 hour.

## TANK COMMANDER'S READINESS TEST

### PART H. TARGET ACQUISITION

The Test Proctor will administer the following TEC Lesson pre-tests and the Tank Commander will answer only those questions so indicated.

- . Target Range Estimation (020-171-1611-F)
  - Tank Commander will answer questions 2, 4, and 5.
- . Locating and Reporting Targets (020-171-1612-F)
  - Tank Commander will answer question 1.
- . Target Acquisition Scanning Techniques (020-171-1614-F)
  - Tank Commander will answer questions 1, 3, 4, and 6.
- . Armor Vehicle Recognition (935-171-0203-F)
  - Tank Commander will identify all vehicles shown on TEC tape, vehicle 1 through vehicle 17.

TANK COMMANDER'S READINESS TEST

PART H. TARGET ACQUISITION

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-  
1614-F, and 935-171-0203-F.

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer' \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-1611-F

2. Step a.

Step b.

Step c.

4.

5.

020-171-1612-F

1.a. Target

b. Posture

c. Direction

d. Range

020-171-1614-F

1.

6.a.

3.

b,

4.

935-171-0203-F

<u>VEHICLE</u>	<u>COUNTRY</u>	<u>VEHICLE</u>	<u>COUNTRY</u>
1.		10.	
2.		11.	
3.		12.	
4.		13.	
5.		14.	
6.		15.	
7.		16.	
8.		17.	
9.			

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART H. TARGET ACQUISITION

#### PRE-TEST ANSWER KEY

TEC Lessons 020-171-1611-F,  
020-171-1612-F, 020-171-1614-F,  
and 935-171-0203-F.

#### ANSWER KEY

##### TARGET RANGE ESTIMATION (020-171-1611-F)

2. The Tank Commander diagram or description must include these steps:

Step a. Divide the distance to the target in half.

Step b. Estimate the distance to the halfway point in 100 meters increments.

Step c. Double the range for estimated range to target.

4. 1000 meters

5. 600 meters

##### LOCATING AND REPORTING TARGETS (020-171-1612-F)

1.a. Target: TANK

b. Position: MOVING LEFT

c. Direction: ONE O'CLOCK (12:00 or 200 is acceptable)

d. Range: ONE FIVE HUNDRED

##### TARGET ACQUISITION SCANNING TECHNIQUES (020-171-1614-F)

1. A, C

3. B, C

4. A

6.a. Short, jerky movements

b. Pause a few seconds at each point.



ARMOR VEHICLE RECOGNITION  
(935-171-0203-F)

	<u>VEHICLE</u>	<u>COUNTRY</u>		<u>VEHICLE</u>	<u>COUNTRY</u>
1.	AMX-30	FRENCH	10.	AMX-13	French
2.	M60	US	11.	M60A1	US
3.	CHIEFTON	British	12.	JAG-PANZER	German
4.	ASU-57	Soviet	13.	PT-76	Soviet
5.	M551	US	14.	T-34	Soviet
6.	T-10	Soviet	15.	LEOPARD	German
7.	CENTURIAN	British	16.	ASU-85	Soviet
8.	M60A2	US	17.	T-62	Soviet
9.	T-55	Soviet			

SCORING KEY.

Award 5 points for each correct response (165 points possible).

PASSING SCORE = 150 points.

## TANK COMMANDER'S READINESS TEST

### PART I. LOCATING AND REPORTING TARGETS (HO)

**CONDITIONS.** Fully operational M60A1 tank located at an observation point on a target acquisition course. The course includes silhouettes, tank and truck targets located at ranges from 400 meters to 1500 meters. The TC will observe from the open hatch position. (The tank will be positioned so the TC's target area of responsibility (10:00 o'clock clockwise to 2:00 o'clock) overlaps the right and left boundaries of the target acquisition course.) Note: TC's actual area of responsibility for target acquisition extends from 9:00 o'clock clockwise to 6:30 o'clock.

**INSTRUCTIONS TO TANK COMMANDER.** "This is a test of your target acquisition ability. You will be required to scan the area, estimate range to various targets, and report target locations. React to my instructions."

#### TASKS.

Conduct a quick search scan of the area.  
\*Locate and identify targets in the area.  
Estimate range to targets in the area.  
Report locations of targets in the area.

#### NOTES.

- a. Tank Commander should not be given this test until he has passed Tank Commander's Readiness Test, Part H.
- b. Tasks should be performed in order given.
- c. See example layout of Target Acquisition Course.
- d. See Module TC-9 for remedial training of deficiencies.
- e. Estimated time, 3/4 hour.

#### PERFORMANCE MEASURES.

##### 1. CONDUCT A QUICK SEARCH SCAN OF THE AREA

Yes No NA

Given the special command, SCAN YOUR TARGET AREA OF RESPONSIBILITY:

- . Scanned area directly in front, going close in to far out.

AD-A082 569

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/6 5/9

TANK CREWMAN (M60A1) READINESS TESTS. (U)

NOV 79 R E O'BRIEN, J H HARRIS, W C OSBORN

DAHC19-76-C 001

UNCLASSIFIED

HUMRRO-RP-WD(KY)-79-11

ARI-RP-79-13

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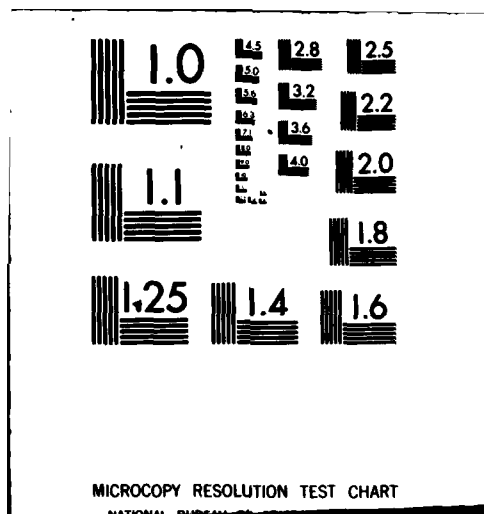
END

DATE

FILED

15-80

DTIC



Yes No NA

- . Scanned area to left (or right) of initial area, overlapping initial area, going from close in to far out. \_\_\_\_\_
- . Scanned area to right (or left) of initial area, overlapping initial area, going from close in to far out. \_\_\_\_\_

## 2. LOCATE AND IDENTIFY TARGETS IN THE AREA

Given the special command, LOCATE AND IDENTIFY TARGETS IN THE AREA, the Tank Commander will have five minutes to locate and identify all targets.

- . Located and identified target 1 (TROOPS). \_\_\_\_\_
- . Located and identified target 2 (TANK). \_\_\_\_\_
- . Located and identified target 3 (TANK). \_\_\_\_\_
- . Located and identified target 4 (TRUCK). \_\_\_\_\_
- . Located and identified target 5 (TROOPS). \_\_\_\_\_
- . Located and identified target 6 (TRUCK). \_\_\_\_\_
- . Located and identified target 7 (TANK). \_\_\_\_\_
- . Located and identified target 8 (TROOPS). \_\_\_\_\_

## 3. ESTIMATE RANGE TO TARGETS IN THE AREA

Given the range of 1000 meters to target 2 and the special command, DETERMINE RANGE TO ALL TARGETS IN THE AREA, the Tank Commander will determine the range to all targets within  $\pm 100$  meters.

- . Determined range to target 1 as 400 meters. \_\_\_\_\_
- . Determined range to target 3 as 500 meters. \_\_\_\_\_
- . Determined range to target 4 as 1200 meters. \_\_\_\_\_
- . Determined range to target 5 as 1000 meters. \_\_\_\_\_
- . Determined range to target 6 as 1200 meters. \_\_\_\_\_
- . Determined range to target 7 as 1500 meters. \_\_\_\_\_
- . Determined range to target 8 as 900 meters. \_\_\_\_\_

## 4. REPORT LOCATION OF TARGETS IN THE AREA

Given a designated target and the special command, REPORT LOCATION OF TARGET NO. \_\_\_\_\_, the Tank Commander will report the type, posture (moving or stationary), location (by clock system, within one hour deviation), and range to the target (within  $\pm 100$  meters).

- . Target 1. TROOPS, STATIONARY, TEN O'CLOCK, FOUR HUNDRED. \_\_\_\_\_
- . Target 3. TANK, STATIONARY, ONE O'CLOCK, FIVE HUNDRED. \_\_\_\_\_

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Target 4. TRUCK, MOVING LEFT TO RIGHT, ELEVEN O'CLOCK, ONE TWO HUNDRED.	_____	_____	_____
. Target 5. TROOPS, STATIONARY, ONE O'CLOCK, ONE THOUSAND.	_____	_____	_____
. Target 6. TRUCK, STATIONARY, TWELVE O'CLOCK, ONE TWO HUNDRED.	_____	_____	_____
. Target 7. TANK, STATIONARY, TWELVE O'CLOCK, ONE FIVE HUNDRED.	_____	_____	_____
. Target 8. TROOPS, STATIONARY, TWO O'CLOCK, NINE HUNDRED.	_____	_____	_____

**SCORING.**

To pass, Tank Commander must have:

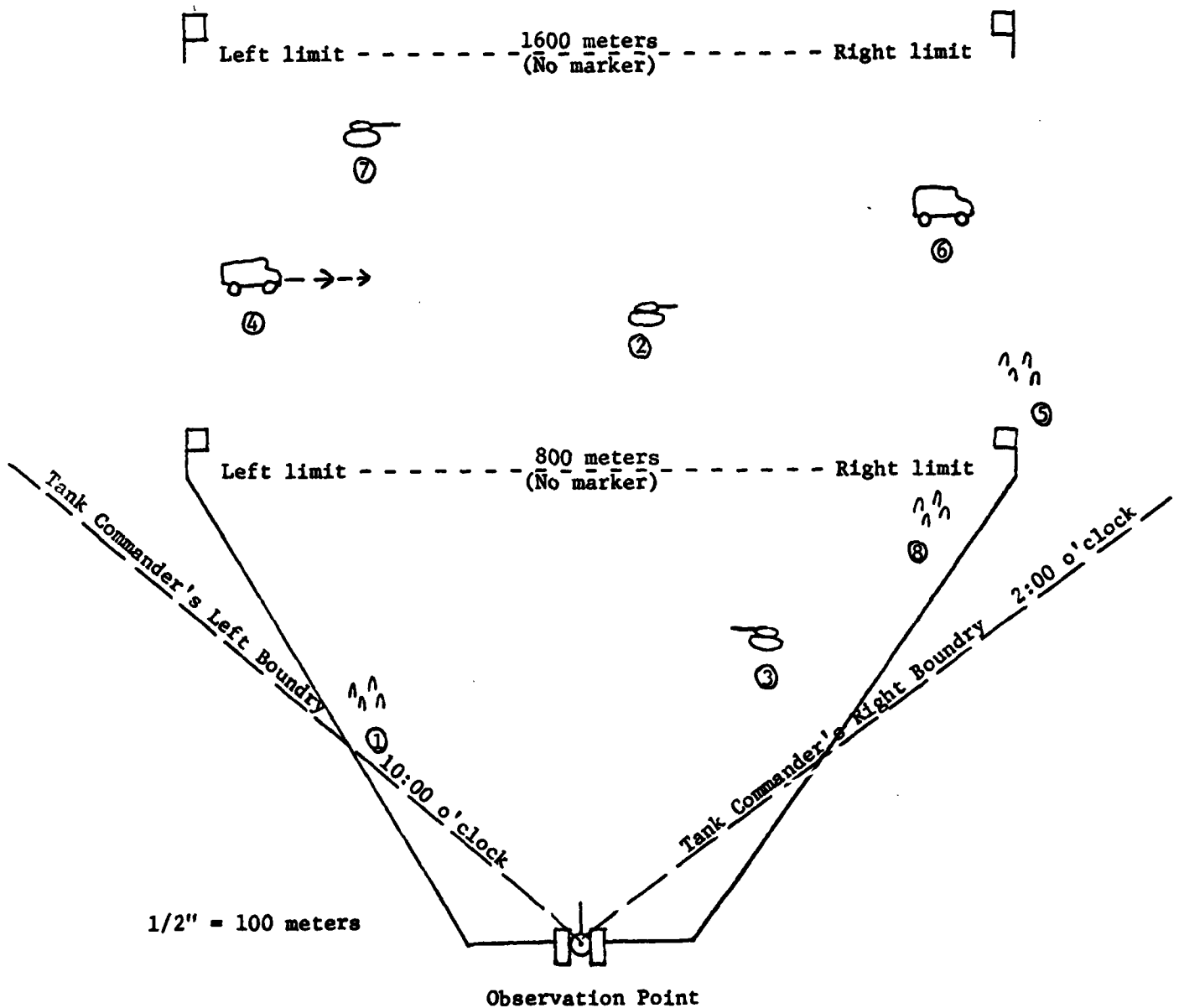
- a. Located and identified all targets in the area within five minutes.
- b. Estimated range to all targets within  $\pm$  100 meters.
- c. Given location of all targets within one hour deviation.
- d. Been checked "Yes" or "NA" on each performance measure.

**COMMENTS.** (Recommended remedial training, etc.)

PASS FAIL

# TARGET ACQUISITION COURSE

Example. (Tank Commander's target area of responsibility is from 10:00 o'clock to 2:00 o'clock. During field operations, the area is clockwise from 9:00 o'clock to 6:30 o'clock.)



## TANK COMMANDER'S READINESS TEST

### PART J. TACTICAL OPERATIONS (W)

**CONDITIONS.** The Tank Commander is in a classroom and is administered TEC pre-tests 020-171-5361-F and 020-171-5364-F.

**INSTRUCTIONS TO TANK COMMANDER.** "You have received a test booklet and an answer sheet. Write your name, social security number, tank number, and today's date on the answer sheet. The test consists of two parts: Initial Fire Commands, M60/M60A1/M60A3 Tank (020-171-5361-F). Do not write in the test booklet; indicate your answers on the answer sheet. The Test Proctor is not allowed to answer any questions concerning test content. When you finish, turn in the test booklet and answer sheet to the Test Proctor".

#### TASKS.

- List necessary elements contained in the initial fire command for various targets.
- Explain ammunition setting on ballistic computer when using the coax.
- List correct range settings for coax targets at various ranges.
- Identify correct sight pictures for engaging various targets with the coax.
- Identify correct sight pictures for engaging various targets with the caliber .50 machinegun.

#### NOTES.

- a. See Module TC-10 for remedial training of deficiencies.
- b. Estimated time, 1/2 hour.



## TANK COMMANDER'S READINESS TEST

### PART J: TACTICAL OPERATIONS

The Test Proctor will administer the following TEC Lesson pre-tests, and the Tank Commander will answer only those questions so indicated:

- . Initial Fire Commands, M60/M60A1, M60A3 Tank (020-171-5361-F)
  - Tank Commander will answer questions 1,2,3,5,7,8, and 9.
- . Machinegun Engagements, M60/M60A1/M60A3 Tank (020-171-5364-F)
  - Tank Commander will answer all questions.

## TANK COMMANDER'S READINESS TEST

### PART J: TACTICAL OPERATIONS

The Test Proctor will administer the following TEC Lesson pre-tests, and the Tank Commander will answer only those questions so indicated:

- . Initial Fire Commands, M60/M60A1, M60A3 Tank (020-171-5361-F)
  - Tank Commander will answer questions 1,2,3, 5,7,8, and 9.
- . Machinegun Engagements, M60/M60A1/M60A3 Tank (020-171-5364-F)
  - Tank Commander will answer all questions.

TANK COMMANDER'S READINESS TEST

PART J: TACTICAL OPERATIONS

TEC Lessons 020-171-5361-F  
and 020-171-5364-F

ANSWER SHEET

Name \_\_\_\_\_

SSN \_\_\_\_\_ Tank No. \_\_\_\_\_

Scorer \_\_\_\_\_ Test Date \_\_\_\_\_

020-171-5361-F

1. Enemy tank, frontal engagement:

\_\_\_\_\_  
(Fire command elements)

2. Enemy tank, flank engagement:

\_\_\_\_\_  
(Fire command elements)

3. A building to be burned:

\_\_\_\_\_  
(Fire command elements)

5. Enemy bunker at 1500 meters:

\_\_\_\_\_  
(Fire command elements)

7. Enemy troops at 500 meters with coax machinegun:

\_\_\_\_\_  
(Fire command elements)

8. Antitank gun at a range of 1700 meters:

\_\_\_\_\_  
(Fire command elements)

9. Surprise target, enemy tank, within battlesight range:

---

(Fire command elements)

020-171-5364-F

- |    |     |
|----|-----|
| 1. | 6.  |
| 2. | 7.  |
| 3. | 8.  |
| 4. | 9.  |
| 5. | 10. |

COMMENT. (Recommended remedial training, etc.)

PASS FAIL

## TANK COMMANDER'S READINESS TEST

### PART J: TACTICAL OPERATIONS

#### PRE-TEST ANSWER KEY

TEC Lessons 020-171-5361-F  
and 020-171-5364-F

#### ANSWER KEY

##### INITIAL FIRE COMMANDS, M60/M60A1/M60A3 TANK (020-171-5361-F)

- |  |   |
|--|---|
| 1. GUNNER...SABOT...TANK...FIRE                        | 7. GUNNER...COAX...TROOPS...FIRE                          |
| 2. GUNNER...SABOT...TANK...FIRE                        | 8. GUNNER...HEP...ANTITANK...<br>ONE SEVEN HUNDRED...FIRE |
| 3. GUNNER...SMOKE...BUILDING...FIRE                    | 9. GUNNER...BATTLESIGHT...TANK...FIRE                     |
| 5. GUNNER...HEP...BUNKER...<br>ONE FIVE HUNDRED...FIRE |   |

##### MACHINEGUN ENGAGEMENTS, M60/M60A1/M60A3 TANK (020-171-5364-F)

- |               |  |
|---------------|--|
| 1. HEP        | 6. Near  |
| 2. A          | 7. Near  |
| 3. 850 meters | 8. Far   |
| 4. 500 meters | 9. Continuous Fire and Adjust.<br>Fire in assigned sector on<br>command. |
| 5. B          | 10. C  |

#### SCORING KEY.

Award 5 points for each correct response (85 possible points).

PASSING SCORE = 75 points.

## TANK COMMANDER'S READINESS TEST

### PART K. TACTICAL OPERATIONS (HO)

**CONDITIONS.** Fully operational M60A1 tank with BII, skilled driver, tank course including suitable areas for defilade and simulated targets (moving and stationary main gun, coax, and M85).

**INSTRUCTIONS TO TANK COMMANDER.** "This is a test of your ability to fight your tank. We are going on a simulated combat mission. Your tank has a basic load of ammunition and we expect to encounter enemy vehicles and troops. You will be scored on what you do as well as how you do it. Do you have any questions? . . . Ready? . . . . We are preloading SABOT . . . . Begin."

#### TASKS.

- \*Designate crew sectors of responsibility for target acquisition.

- \*Acquire targets.

- \*Preset SABOT battlesight information.

  - Main gun battlesight engagement, moving to a halt, single stationary target, SABOT. (1 Tank)

  - Main gun battlesight engagement, moving to a halt, two moving targets, SABOT, TC masked. (2 Tanks)

    - .50 caliber and coax engagement, moving to a halt, one moving target and one stationary target. (1 moving BRDM and 1 Infantry Squad; Gunner engages infantry squad with coax.)

    - .50 caliber and main gun engagement moving to a halt, three stationary targets, SABOT. (1 BRDM and 2 Tanks; Gunner engages two tanks with main gun.)

- \*Preset HEAT battlesight information.

  - Main gun battlesight engagement, moving to a halt, three stationary targets, HEAT. (3 Tanks)

    - .50 caliber and coax engagement, moving to a halt, three stationary targets. (1 Infantry Squad; Gunner engages 1 RPG TM and 1 ATGM TM with coax.)

  - Main gun RCLDF engagement, at the halt, three stationary targets, HEAT, TC masked. (1 Infantry Squad and 2 Tanks; Gunner engages two tanks with main gun.)

    - .50 caliber and coax engagement, at the halt, two stationary targets, TC masked. (1 BRDM and 1 Infantry Squad; Gunner engages Infantry Squad with coax.)

  - Main gun battlesight engagement, at the halt, one stationary target and one moving target, SABOT. (2 Tanks)

- \*Apply burst-on-target (BOT) adjustment.

- \*Apply target-form (TF) adjustment.

- \*Apply standard adjustment.

- #\*Lay telescope reticle on target properly.

## NOTES.

- a. Tank Commander should complete Tank Commander's Readiness Tests A through J before taking this part.
- b. Scorer should act as the Gunner and Loader during this test.
- c. The targets should be appropriate for the engagement. However, the order in which the targets appear is not important.
- d. After Tasks 1 through 13 have been completed, scorer will designate targets to TC and indicate where a miss occurred. TC will apply BOT, TF, and standard adjustment corrections. Scorer will verify sight picture each time TC announces ON THE WAY.
- e. See example layout for "dry" TCQC course and second round adjustment targets.
- f. See Module TC-11 for remedial training of deficiencies.
- g. Cross training tasks are indicated by a # symbol.
- h. Estimated time, 2 hours.

## PERFORMANCE MEASURES.

	<u>Yes</u>	<u>No</u>	<u>NA</u>
1. DESIGNATE CREW SECTORS OF RESPONSIBILITY FOR TARGET ACQUISITION			
. Assigned Gunner's sector as: clockwise from 10:00 o'clock to 2:00 o'clock.	___	___	___
. Assigned Loader's sector as: counterclockwise from 9:30 o'clock to 5:30 o'clock.	___	___	___
. Assigned Driver's sector as: clockwise from 10:00 o'clock to 2:00 o'clock.	___	___	___
. Assigned TC's (own) sector as: clockwise from 9:00 o'clock to 6:30 o'clock.	___	___	___
2. ACQUIRE TARGETS			
. Detected targets in assigned observation sector.	___	___	___
3. PRESET SABOT BATTLESIGHT INFORMATION			
. Instructed Loader to load SABOT.	___	___	___
. Instructed Gunner to index SABOT into the ballistic computer.	___	___	___
. Indexed 1600 meters into the rangefinder.	___	___	___

- |   | <u>Yes</u> | <u>No</u> | <u>NA</u> |
|---|------------|-----------|-----------|
| 4. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT,<br>ONE STATIONARY TARGET, SABOT (1 TANK)  |            |           |           |
| . Determined that target was within battlesight range.  | ___        | ___       | ___       |
| . Started engagement within <u>1 second</u> of target appearance.   | ___        | ___       | ___       |
| . Announced GUNNER, BATTLESIGHT.  | ___        | ___       | ___       |
| . Laid gun for direction within <u>3 seconds</u> .  | ___        | ___       | ___       |
| . Announced TANK.   | ___        | ___       | ___       |
| . Did not announce FIRE until he was in position to observe through binoculars or rangefinder.  | ___        | ___       | ___       |
| . After Gunner announced IDENTIFIED, announced FIRE.  | ___        | ___       | ___       |
| 5. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT,<br>TWO MOVING TARGETS, SABOT, TC MASKED (2 TANKS)   |            |           |           |
| . Determined that targets were within battlesight range.  | ___        | ___       | ___       |
| . Engaged most dangerous target first.  | ___        | ___       | ___       |
| . Started engagement within <u>1 second</u> of target appearance.   | ___        | ___       | ___       |
| . Announced GUNNER, BATTLESIGHT.  | ___        | ___       | ___       |
| . Laid gun for direction within <u>3 seconds</u> .  | ___        | ___       | ___       |
| . Announced TWO TANKS, RIGHT TANK FIRST.  | ___        | ___       | ___       |
| . Did not announce FIRE until he was in position to observe through rangefinder.  | ___        | ___       | ___       |
| . After Gunner announced IDENTIFIED, announced FIRE.  | ___        | ___       | ___       |
| . After first target was destroyed, shifted fire to second target.  | ___        | ___       | ___       |
| . Issued proper fire command for second target.   | ___        | ___       | ___       |
| 6. .50 CALIBER AND COAX ENGAGEMENT, MOVING TO A HALT,<br>ONE MOVING AND ONE STATIONARY TARGETS, .50 CALIBER<br>AND COAX (1 BRDM AND 1 INFANTRY SQUAD) |            |           |           |
| . Started engagement within <u>1 second</u> of target appearance.   | ___        | ___       | ___       |
| . Announced GUNNER, COAX.   | ___        | ___       | ___       |
| . Laid gun for direction within <u>3 seconds</u> .  | ___        | ___       | ___       |
| . Announced TROOPS.   | ___        | ___       | ___       |
| . When Gunner announced IDENTIFIED, announced FIRE AND ADJUST, CALIBER FIFTY.   | ___        | ___       | ___       |
| . Placed safety in FIRE (F) position.   | ___        | ___       | ___       |
| . Assured rate of fire selector was to the right for low rate of fire.  | ___        | ___       | ___       |
| . Held cupola electrical power control switch momentarily in ON position.   | ___        | ___       | ___       |
| . Placed machinegun firing switch in ON position.   | ___        | ___       | ___       |
| . Applied one half lead (2 1/2 mils) in direction of target apparent motion.  | ___        | ___       | ___       |



	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Laid lead line (at 1000 meter range line) at center of mass of target.	___	___	___
. Depressed machinegun firing trigger switch and fired 10-20 round bursts.	___	___	___
. Fired .50 caliber within <u>7 seconds</u> of announcing CALIBER FIFTY.	___	___	___
. Announced TC COMPLETE.	___	___	___
7. .50 CALIBER AND MAIN GUN PRECISION ENGAGEMENT MOVING TO A HALT, THREE STATIONARY TARGETS, .50 CALIBER AND SABOT (1 BRDM AND 2 TANKS)			
. Determined that target was beyond battlesight range.	___	___	___
. Started engagement within <u>1 second</u> of target appearance.	___	___	___
. Announced GUNNER, SABOT.	___	___	___
. Laid gun for direction within <u>3 seconds</u> .	___	___	___
. Determined range to target to an accuracy of <u>± 50 meters</u> within <u>5 seconds</u> .	___	___	___
. Announced TWO TANKS, RIGHT TANK FIRST (or LEFT TANK FIRST).	___	___	___
. When Gunner announced IDENTIFIED, announced FIRE AND ADJUST, CALIBER FIFTY.	___	___	___
. Placed safety in FIRE (F) position.	___	___	___
. Assured rate of fire selector was to the right for low rate of fire.	___	___	___
. Held cupola electrical power control switch momentarily in ON position.	___	___	___
. Placed machinegun firing switch in ON position.	___	___	___
. Laid 1200 meter rangeline at center of mass of target.	___	___	___
. Depressed machinegun firing trigger switch and fired 10-20 round bursts.	___	___	___
. Fired .50 caliber within <u>7 seconds</u> of announcing CALIBER FIFTY.	___	___	___
. Announced TC COMPLETE.	___	___	___
8. PRESET HEAT BATTLESIGHT INFORMATION			
. Instructed Loader to load HEAT.	___	___	___
. Instructed Gunner to index HEAT into the ballistic computer.	___	___	___
. Indexed 1000 meters into the rangefinder.	___	___	___
9. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, THREE STATIONARY TARGETS, HEAT (3 TANKS)			
. Determined that targets were within battlesight range.	___	___	___
. Started engagement within <u>1 second</u> of target appearance.	___	___	___
. Announced GUNNER, BATTLESIGHT.	___	___	___
. Laid gun for direction within <u>3 seconds</u> .	___	___	___

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Announced THREE TANKS, RIGHT TANK FIRST (or LEFT TANK FIRST, or CENTER TANK FIRST).	—	—	—
. Did not announce FIRE until he was in position to observe through binoculars or rangefinder.	—	—	—
. After Gunner announced IDENTIFIED, announced FIRE.	—	—	—
. After first target was destroyed, shifted fire to second and then third targets.	—	—	—
. Issued proper fire command for second and third targets.	—	—	—
10. .50 CALIBER AND COAX ENGAGEMENT, MOVING TO A HALT, THREE STATIONARY TARGETS, .50 CALIBER AND COAX (1-RPG TM, 1 ATGM TM, AND 1 INFANTRY SQUAD)			
. Started engagement within <u>1 second</u> of target appearance.	—	—	—
. Announced GUNNER, COAX.	—	—	—
. Laid gun for direction within <u>3 seconds</u> .	—	—	—
. Announced TWO ANTI-TANK GUNS, CLOSE IN ONE FIRST.	—	—	—
. When Gunner announced IDENTIFIED, announced FIRE AND ADJUST, CALIBER FIFTY.	—	—	—
. Placed safety in FIRE (F) position.	—	—	—
. Assured rate of fire selector was to the right for low rate of fire.	—	—	—
. Held cupola electrical power control switch momentarily in ON position.	—	—	—
. Placed machinegun firing switch in ON position.	—	—	—
. Laid 1400 meter rangeline at near edge of target.	—	—	—
. Depressed machinegun firing trigger switch and fired 10-20 round bursts.	—	—	—
. Fired .50 caliber within <u>7 seconds</u> of announcing CALIBER FIFTY.	—	—	—
. Traversed and elevated .50 caliber for area coverage.	—	—	—
. Announced TC COMPLETE.	—	—	—
11. MAIN GUN RCLDF ENGAGEMENT, AT THE HALT, THREE STATIONARY TARGETS, HEAT, TC MASKED (2 TANKS AND 1 INFANTRY SQUAD)			
(Note: At the start of the RCLDF engagement a round of HEP is in the chamber and HEP is indexed in the ballistic computer.)			
. Announced GUNNER, DIRECT FIRE, INDEX HEP, FIRE HEAT, TWO TANKS - HULL DOWN FIRST, DEFLECTION SEVEN ZERO LEFT, ELEVEN HUNDRED, QUADRANT PLUS SIX.	—	—	—
After Gunner reads back DEFLECTION SEVEN ZERO LEFT and QUADRANT PLUS SIX and IDENTIFIED:			
. Announced FIRE AND ADJUST, CALIBER FIFTY.	—	—	—
. Placed safety in FIRE (F) position.	—	—	—
. Assured rate of fire selector was to the right for low rate of fire.	—	—	—

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Held cupola electrical power control switch momentarily in ON position.	—	—	—
. Placed machinegun firing switch in ON position.	—	—	—
. Placed IR switch in 24V position.	—	—	—
. Rotated light source control for desired reticle brightness.	—	—	—
. Rotated focusing ring until target appears sharp.	—	—	—
. Laid 800 meter rangeline at near edge of target.	—	—	—
. Depressed machinegun firing trigger switch and fired 10-20 round bursts.	—	—	—
. Fired .50 caliber within <u>7 seconds</u> of announcing CALIBER FIFTY.	—	—	—
. Traversed and elevated .50 caliber for area coverage.	—	—	—
. Announced TC COMPLETE.	—	—	—
12. .50 CALIBER AND COAX ENGAGEMENT, AT THE HALT, TWO STATIONARY TARGETS, .50 CALIBER AND COAX, TC MASKED (1 INFANTRY SQUAD AND 1 BRDM)			
. Started engagement within <u>1 second</u> of target appearance.	—	—	—
. Announced GUNNER, COAX.	—	—	—
. Laid gun for direction within <u>3 seconds</u> .	—	—	—
. Announced TROOPS.	—	—	—
. When Gunner announced IDENTIFIED, announced FIRE AND ADJUST, CALIBER FIFTY.	—	—	—
. Placed Safety in FIRE (F) position.	—	—	—
. Assured rate of fire selector was to the right for low rate of fire.	—	—	—
. Held cupola electrical power control switch momentarily in ON position.	—	—	—
. Placed machinegun firing switch in ON position.	—	—	—
. Placed IR switch in 24V position.	—	—	—
. Rotated light source control for desired reticle brightness.	—	—	—
. Rotated focusing ring until target appears sharp.	—	—	—
. Laid 900 meter rangeline at center of mass of target.	—	—	—
. Depressed machinegun firing trigger switch and fired 10-20 round bursts.	—	—	—
. Fired .50 caliber within <u>7 seconds</u> of announcing CALIBER FIFTY.	—	—	—
. Announced TC COMPLETE.	—	—	—
13. MAIN GUN BATTLESIGHT ENGAGEMENT, AT THE HALT, ONE STATIONARY TARGET AND ONE MOVING TARGET, SABOT (2 TANKS)			
. Determined that targets were within battlesight range.	—	—	—
. Engaged most dangerous target first.	—	—	—

	<u>Yes</u>	<u>No</u>	<u>NA</u>
. Started engagment within <u>1 second</u> of target appearance.	—	—	—
. Announced GUNNER BATTLESIGHT.	—	—	—
. Laid gun for direction within <u>3 seconds</u> .	—	—	—
. Announced TWO TANKS, LEFT TANK FIRST.	—	—	—
. Did not announce FIRE until he was in position to observe through binoculars or rangefinder.	—	—	—
. After Gunner announced IDENTIFIED announced FIRE.	—	—	—
. After first target was destroyed, shifted fire to second target.	—	—	—
. Issued proper fire command for second target.	—	—	—
14. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, ONE STATIONARY TARGET ( 1 TANK) <u>APPLY BOT</u>			
After Gunner has fired and announced LOST:			
. Relays to maintain correct initial sight picture on rangefinder. (Notes point of sight reticle where tracer appears in relation to target.)	—	—	—
. Announces OVER-RIGHT-BOT (or other appropriate sensing.)	—	—	—
. Moves imaged tracer point on reticle, by gun controls, to center of mass of target.	—	—	—
. Announced ON THE WAY. (NOTE: SCORER VERIFIES SIGHT PICTURE.)	—	—	—
15. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, ONE STATIONARY TARGET (1 TANK) <u>APPLY TARGET FORM</u>			
After Gunner has fired and announced LOST, Scorer announces, OVER, DROP ONE HALF FORM-FIRE:			
. Relays to maintain correct initial sight picture on rangefinder.	—	—	—
. Moves sight reticle down by gun controls half the distance of the visible height of target vehicle.	—	—	—
. Announced ON THE WAY. (NOTE: SCORER VERIFIES SIGHT PICTURE.)	—	—	—
16. MAIN GUN BATTLESIGHT ENGAGEMENT, MOVING TO A HALT, ONE STATIONARY TARGET (1 TANK) <u>APPLY STANDARD ADJUSTMENT</u>			
After Gunner has fired and announced LOST, Scorer announces OVER:			
. Relays to maintain correct initial sight picture on rangefinder.	—	—	—
. Moves sight reticle down 1 mil by gun controls.	—	—	—
. Announced ON THE WAY.	—	—	—

	<u>Yes</u>	<u>No</u>	<u>NA</u>
17. LAY TELESCOPE RETICLE ON TARGET PROPERLY			
(TC as Gunner. Scorer informs Gunner (TC) that Gunner's primary sight is inoperative.)			
After Scorer announced GUNNER, HEAT:			
. Turned main gun switch ON.	—	—	—
. Checked that HEAT reticle was positioned in Gunner's telescope.	—	—	—
After Scorer announced TANK, ONE EIGHT HUNDRED:			
. Identified target and announced IDENTIFIED within <u>3 seconds</u> .	—	—	—
. Laid 1800 meter rangeline of telescope at center of mass of target.	—	—	—
. Made final precise lay.	—	—	—
(NOTE: SCORER VERIFIES SIGHT PICTURE.)			
. Announced ON THE WAY.	—	—	—
. Fired main gun within <u>7 seconds</u> of beginning of fire command.	—	—	—

#### SCORING.

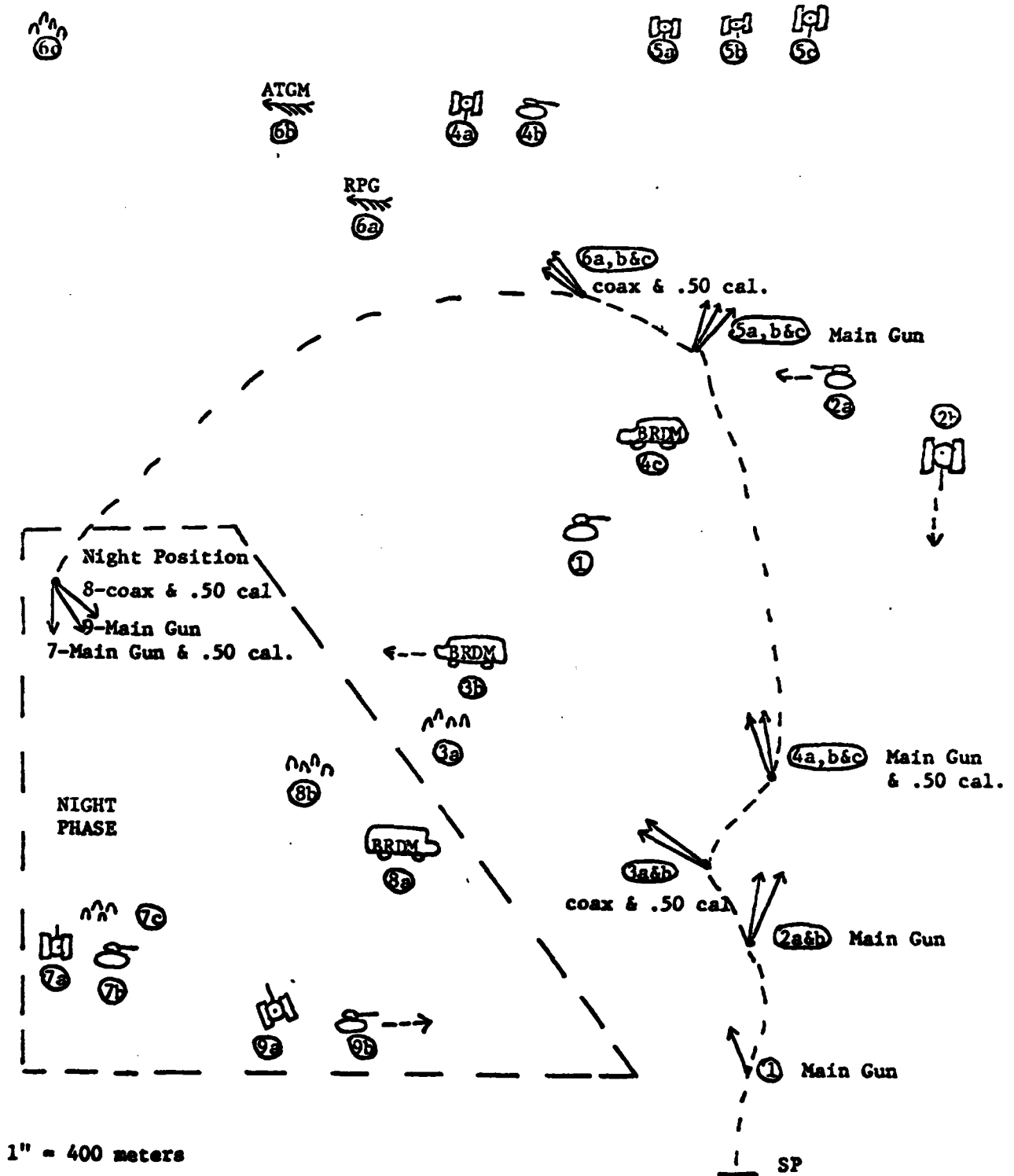
To pass, Tank Commander must have:

- Detected all targets and given the proper ALERT element of the fire commands.
- Given proper element of each fire command at appropriate time for each target.
- Taken up correct sight picture for each target engaged.
- Continued to monitor sight picture after firing.
- Met all time requirements.
- Been checked "Yes" or "NA" on all performance measures.

COMMENTS. (Recommended remedial training, etc.)

PASS FAIL

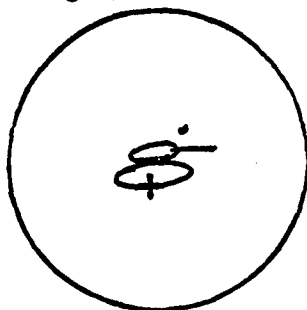
"DRY" TANK CREW QUALIFICATION COURSE  
(Gunner and TC Dry TCQC)



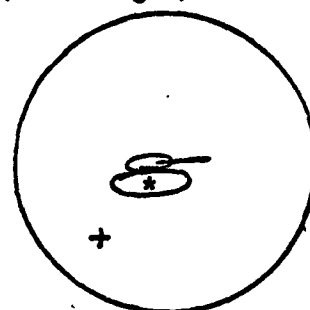
SECOND ROUND ADJUSTMENT TARGETS  
(BOT, TF and Standard Adjustment)

BOT TARGET

Initial Sight Picture  
(Battlesight)

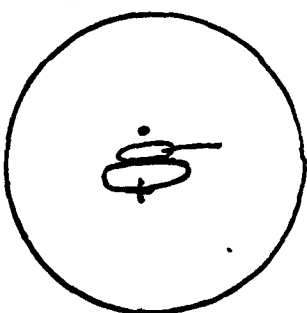


Subsequent Sight Picture  
(Battlesight)

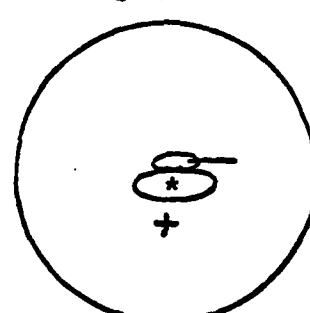


TF TARGET

Initial Sight Picture  
(Battlesight)

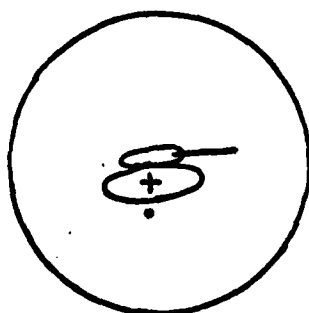


Subsequent Sight Picture  
(Battlesight)



STANDARD ADJUSTMENT

Initial Sight Picture  
(Precision)



Subsequent Sight Picture  
(Precision)

